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CERAMICS
DEPARTMENT

BRICK and CLAY RECORD

CONSERVE FUEL LABOR TIME

BY INSTALLING THE

"MINTER SYSTEM"

PATENTED

The Application of Continuous Burning to

Round Down-Draft Kilns

This New Application has been in actual operation for over a year in our Plant, with the result that its efficiency and practicability have been established beyond all experimentation.

IT SAVES MONEY by reducing labor, fuel, time and expense in burning, and in producing a product which is more evenly and perfectly burned.

"THE MINTER SYSTEM" may be installed at comparatively small cost on Round Down-Draft Kilns already built; but when installed in New Construction "THE MINTER SYSTEM" results in a material reduction of building cost, on account of the fewer number of kilns required for desired output.

Write us for full details

FLINT RIVER BRICK COMPANY - ALBANY, GEORGIA

Vol. 52, No. 13 Chicago June 18, 1918

WELLER
MADE
CHICAGO

When You Need Machinery

for your brick or clay working plant, you want to know that the concern that furnishes it will stand back of it.

We have a reputation to maintain, we have the facilities for turning out machinery of all kinds, in our line, regardless of size and when things are not right we lose no time in making them right.

This big machine shop is fitted up with the most modern tools and arrangements for promptly executing your orders.

We know how to, and do build the best

Elevating, Conveying and Transmitting Machinery

Weller Manufacturing Company, Chicago

1820-1856 North Kostner Avenue

SAY I SAW IT IN
BRICK AND CLAY RECORD

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be able to do what the railroads could not possibly accomplish while operating as individual units.

Not only is it believed that the car shortage will be relieved but it is prophesied that shipments of all kinds will experience speedier delivery. The matter of priorities, it is predicted, will also be greatly simplified. Instead of the railroads being constantly beset by petty officials endeavoring to get their shipments thru, the matter of priorities will be unified and much of their abuse eliminated. In this connection, it is hoped that Priority Order No. 2 will have no sequels.

The judicious trimming of passenger schedules, especially where there is keen competition between points, should release considerable motive power for the hauling of freight. Also many features of railroad service which are an outgrowth of competitive conditions, are, it is believed, destined to be eliminated, releasing a large number of men for other pursuits where a shortage may exist.

IMPROVEMENT IN COAL SITUATION ANTICIPATED

Some improvement in the matter of coal supply should be possible under the new management of the nation's carriers. Those who are engaged in the coal industry, as well as government officials interested in the fuel situation, have repeatedly declared that much of the present shortage is due to a lack of sufficient cars. With a reduction in the car shortage and with a readjustment in the matter of priorities, the situation ought to be considerably improved. Also it should be possible for the fuel administration to put into effect its plans for the districting of shipments of the mines, eliminating the overlapping shipments thus economizing to a large degree in the matter of motive power. With the reduction or elimination of congestion at terminals should also come a speedier and surer movement of coal consignments to consuming centers.

There is great hope in the improved railroad outlook and in the prospective betterment of the nation's fuel supply.

ESSENTIALS AND NON-ESSENTIALS AGAIN

On another page of this issue is printed a story from our Washington representative with regard to the activities of the

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Commercial Economy Board of the Council of National Defense as they pertain to the clay products manufacturing industry. We must frankly consider the fact that the government is quietly investigaing the question of essentials and non-essentials. The industry should be prepared to submit the facts in its case so that those who have in hand this important matter may act with wisdom, being in possession of full details.

Brick and Clay Record has already devoted considerable space to this subject, because it believes it to be one of prime importance. The government ought to know of the part which the industry can play in the present national and international situation. It is our business as manufacturers of clay products to see that it is advised. While our materials cannot be shot out of a gun, they are certainly pre-eminently useful for such purposes as factory and warehouse building, industrial housing, the construction of roads having a military and economic value, the increasing of production on America's farms by means of proper underdrainage in the form of clay tile, and in the maintenance of operations in the nation's metallurgical industries, that is, by the unhampered production of refractories. The government is not going to overlook facts, and therefore, information with regard to the essential part which clay products can play during the next few years in the business of the nation, should be presented to the proper officials immediately. If your association calls upon you for facts it is to your interest to furnish them at once. Let no opportunity for co-operation pass. Be on the lookout for chances to work with your fellow manufacturers in seeing that clay products gets a fair hearing in Washington.

INDUSTRIAL HOUSING

We have mentioned the matter of industrial housing. In this connection the United States Bureau of Labor, in its November review of statistics, presents a short article on employers housing in the United States which is a summary of a forthcoming report on that subject. There are probably about one thousand firms who have done housing work for their employes. The bureau has compiled a list of more than 700 of these. A study was made of 213 companies.

The 213 companies, including bituminous and anthracite coal mining, iron mining, copper and gold mining, housed 160,645 of their employes in company houses, or 34.4 per cent. of the total. The fact that only 6.1 per cent. of these houses were of brick, while 89.8 per cent. were of wood and only 4.1 per cent. were of other materials, is certainly a bitter arraignment of the clay products manufacturing industry's promotion policy.

It is our humble opinion that the industry would make no mistake in devoting a large part of its energy in the direction of encouraging industrial housing of a permanent, economic, sanitary and fire safe character during 1918. "Preventable fire is more than a private misfortune," says President Wilson. "It is a public dereliction, and at a time like this of emergency and of manifest necessity for the conservation of natural resources, it is more than ever a matter of deep and present consequence that every means should be taken to prevent this evil." *This does not mean that the nation's industries should house its employes with combustible materials.* Brick, hollow tile and other clay products have some very excellent arguments for their use in connection with the purpose above mentioned.

BUILDING IN 1918

Aside from industrial housing, factory extensions and warehouse construction, all of which should be a feature during the twelvemonth which is before us, it might be interesting to look into the prospects for 1918 building very briefly.

In this connection, everything depends upon the money market. "Dun's Review," in its issue for December 29, speaking on this subject, says: "While all of the recent firmness has been logically retained, the stability of the market at the year-end has been a matter of satisfaction." It goes on to say that naturally there has been a higher average in money rates on all classes of borrowing in 1917, and that a condition of real ease is scarcely to be looked for while the war goes on. While it appears that there will be no plentitude of money for building purposes during 1918, there are no indications that there will be a stringency, so it is presumed that much building will be permitted to proceed.

Is This Complete Combustion? An Exaggerated Case, But Nevertheless Avoidable. It Is an Evil Which Can and Should Be Cured.

FUNDAMENTAL PRINCIPLES *of* COMBUSTION

An Exposition of Those Reactions Which Take Place in the Burning of Fuel Which is so Simple that the Man Entirely Untrained in the Subject, With a Little Study, Can Easily Grasp Its Contents

MOST SUBSTANCES are known to chemists as compounds, because they can be separated by chemical processes into two or more elementary substances. Thus, water and many of the more familiar materials known to man are compounds that can be split up into two or more simpler ingredients. Those substances which cannot be further broken up by the processes used in separating compounds are called elements; they are regarded as elemental, as the nuclei of which the compounds of nature are composed. There are about eighty-three of these elements now known, but many of them are very rare. All pure metals are elements; the oxygen and nitrogen which are mixed and constitute the largest part of the atmosphere are elements; carbon, which is contained in most fuels in a large quantity, is an element.

In many cases when two or more elements unite to form a compound, the combination is accompanied by the liberation of heat. Some of these combinations are used commercially for the purpose of obtaining heat in large quantities. When elements which occur in fuels, such as coal, wood, gas, or petroleum, unite with oxygen, the process is referred to as combustion. The quantity of heat liberated when a pound of material combines with oxygen (burns) is called the heat value or calorific value of that material.

Fuels generally contain a great number of elements, but only three of these ordinarily take part in combustion. They are carbon, hydrogen and sulphur. The sulphur content of fuels, however, is generally very small, and the carbon and hydrogen are therefore the most important ingredients. The combustion of each of these elements will be considered in detail, but before this is done two fundamental ideas must be understood.

The smallest particle of an element which can be conceived of as entering into combination to form a compound is known as an atom of that element. Atoms of each element have characteristic physical and chemical properties, hence the mass of all atoms of one element is always the same. The lightest atom is that of hydrogen, and for convenience its weight is considered as unity. The atom of carbon is twelve times as heavy as that of hydrogen, hence, carbon is said to have an atomic weight equal to twelve. Similarly, the atomic weight of nitrogen is fourteen and that of oxygen is sixteen.

The smallest particle which can be formed by the combination of atoms is known as a molecule. Atoms of the same or different elements can combine to form molecules. Thus two hydrogen atoms combine to form a molecule of hydrogen, and hydrogen gas as it ordinarily exists may be pictured as being made up of a collection of such molecules.

On the other hand, unlike atoms such as carbon and oxygen, may combine to form a molecule called carbon monoxide. Obviously, a molecule of any compound is the smallest particle of that substance which can exist.

For convenience, the different elements are represented by abbreviations; thus oxygen is represented by O, nitrogen by N, hydrogen by H, carbon by C, and sulphur by S. When these abbreviations are written in chemical equations, such as will be given later, they stand for an atom of the substance. Hence C in an equation would mean one atom of carbon. The symbol H_2 means that there are two atoms of hydrogen in combination, hence, one molecule of hydrogen.

THE COMBUSTION OF CARBON

There are two compounds which carbon can form when it unites with oxygen—carbon monoxide (CO) and carbon dioxide (CO_2). The monoxide is formed by the combination of one atom of oxygen with one atom of carbon; the dioxide, by the combination of two atoms of oxygen with one of carbon. The dioxide, therefore, contains twice as much oxygen as does the monoxide. Carbon burned to carbon monoxide has not combined with the largest possible quantity of oxygen that it is capable of, hence in such cases its combustion is said to be incomplete. When, however, carbon dioxide is formed the carbon has combined with as much oxygen as it is capable of and its combustion in this case is complete.

The combustion of carbon to form carbon monoxide may be represented by the following equations:

(A) $C+O=CO$,

(B) $2C+O_2=2CO$

Equation (A) is the simpler but (B) is the more perfect one and indicates more to the chemist than does the simpler form.

FUEL CONSERVATION

This is the first of a series of articles upon fuel topics to appear in "Brick and Clay Record," which are designed to assist the clay products manufacturer to get greater efficiency from his coal and thereby reduce his consumption of that priceless commodity.

We feel certain that, if the articles are read carefully as they are published, our readers can acquire a very thoro knowledge of the different fuels and the proper and most economical manner of using them.

The following is a tentative list of those articles which will follow in subsequent issues:

(2) "Fuels," which will be a discussion of the properties of different kinds of fuels, their cost, and methods of handling and using.

(3) "Furnaces and Stokers," in which will be described different types used under boilers, giving their advantages and disadvantages.

(4) "The Pyrometer as An Aid to Fuel Economy," in which will be treated at length the application of the Pyrometer to burning clay products.

(5) "Firing and Cleaning Furnaces and Burners," dealing with coal, oil, and gas firing.

(6) "Design and Construction of Ceramic Furnaces and Burners," giving the kinds of furnaces which should be used with certain types of fuel or ware.

(7) "Flue Gas Analysis and Draft Gauges," and how their application to burning can reduce the amount of coal consumed.

Each of the above articles will be written by men who are qualified to speak with authority. In each instance we have endeavored to get as the authors men who by experience and training are best equipped to present the different subjects.

The simple equation states that one atom of carbon combines with one atom of oxygen to form one molecule of carbon monoxide. Another interpretation is that a carbon atom which is twelve times the weight of a hydrogen atom, unites with one oxygen atom which is sixteen times heavier than hydrogen, to form a molecule of carbon monoxide which is twelve plus sixteen or twenty-eight times heavier than the hydrogen atom. In other words, the weights of carbon and oxygen combining in the above equation are in the ratio of twelve to sixteen or three to four, or one to one and one-third. If a sufficient number of carbon atoms to weigh one pound be used, a quantity of oxygen weighing one and one-third pounds will be required to combine with them to form carbon monoxide. The resultant carbon monoxide will contain the pound of carbon and the one and one-third pounds of oxygen and will therefore weigh two and one-third pounds.

The same weight relations as above would hold true irrespective of the weight of carbon used.

To illustrate the above, let us assume that nine pounds of carbon are burned to carbon monoxide and that it is desired to find the weight of oxygen used, and the weight of the product. The weight of oxygen used must be one and one-third times the weight of carbon, that is, one and one-third times nine, or twelve pounds. The weight of the product must be two and one-third times the weight of the carbon, that is, two and one-third times nine, which is equal to twenty-one pounds; or, it must be the weight of the carbon burned plus the weight of the oxygen used, that is, nine plus twelve, which is equal to twenty-one pounds.

PROPORTION OF OXYGEN AND NITROGEN IN AIR

In ordinary combustion the oxygen is obtained from the atmosphere, which may be considered a mechanical mixture of oxygen and nitrogen in unvarying proportions. These proportions are approximately 0.23 of oxygen to 0.77 of nitrogen by weight, or 0.21 of oxygen to 0.79 of nitrogen by volume. Therefore, the weight of air which contains one pound of oxygen is:

$$\frac{0.23+0.77}{0.23}=4.35 \text{ lbs. and this}$$

weight of air contains: $4.35-1=3.35$ pounds of nitrogen.

In the problem previously considered it was found that twelve pounds of oxygen would be required to burn nine pounds of carbon to carbon monoxide. The total weight of air required to obtain this oxygen will be $12\times4.35=52.2$ lbs. and it will contain $52.2-12=40.2$ lbs. of nitrogen.

By simple arithmetical calculations like the above, all the weight relations involved in the combustion of carbon to carbon monoxide can be determined. The volume of air required in any case can very readily be found by multiplying the weight of air by its specific volume, which may roughly be taken as 13.14 cubic ft. per pound. Thus, in the above problem where it was found that 52.2 lbs. of air would be required to burn 9 lbs. of carbon to carbon monoxide the volume of air at 62 deg. Fahr. would be equivalent to $52.2\times13.14=685.9$ cubic feet.

Referring now to equation (B), which read $2C+O_2=2CO$, it will be necessary to consider a rather simple law of gases. It has been shown that equal volumes of all gases contain the same number of molecules when at the same temperature and pressure. This is known as Avogadro's Law. It has also been shown that the molecules of oxygen and hydrogen contain two atoms. The above equation can therefore be read, two atoms of carbon combine with one molecule of oxygen to form two molecules of carbon monoxide. But, if every molecule of oxygen yields two molecules of carbon monoxide it follows from Avogadro's law that the carbon monoxide formed will occupy twice the volume of the oxygen used if measured at the same temperature and pressure. If the equation be imagined as containing the coefficient one before the O_2, it will be obvious that the coefficients of the terms representing gas molecules give volume relations directly. This equation gives, therefore, both volume and weight relations.

The combustion of carbon and oxygen to form carbon dioxide is represented by the equation

$$C+O_2=CO_2$$

which shows that one atom of carbon (twelve times heavier than hydrogen) combined with two atoms of oxygen (each sixteen times heavier than hydrogen) to form a molecule of carbon dioxide, which is forty-four times heavier than an atom of hydrogen. Therefore, the weight of carbon and oxygen combining are as twelve is to two times sixteen, which is the same as three is to eight, or one is to two and two-thirds. From this it is seen that two and two-thirds pounds of oxygen are required to burn a pound of carbon to carbon dioxide.

To find the weight of air required to burn one pound of carbon all that is required is to multiply the amount of oxygen required by 4.35, which was previously shown to be the number of pounds of air containing one pound of oxygen. Thus, the required air is $2\frac{2}{3}\times4.35=11.57$ pounds for each pound of carbon burned to CO_2. This number is generally taken as twelve in ordinary engineering practice. Volume relations directly are shown by the above equation, and it is obvious that one molecule of O yields one molecule of CO_2, and hence, that the volume of the product is exactly equal to the volume of the oxygen used in forming it if measured at the same temperature and pressure. This is a very important relation.

THE COMBUSTION OF CO TO CO_2

Since carbon which has burned to carbon monoxide has not combined with all of the oxygen that it is capable of holding, the monoxide can take up additional oxygen by burning to carbon dioxide. This reaction is represented by the formula $2CO+O=2CO_2$, which means that two molecules of carbon monoxide unite with the molecule of oxygen to form two molecules of carbon dioxide. Hence, the volume of CO_2 formed is equal to that of the CO burned.

So far as the final result is concerned, it makes no difference whether the carbon is burned directly to CO_2 or first to CO and then to CO_2. In either case the total amount of oxygen used is the same, and as we shall see later the total amount of heat liberated in either case is also the same.

Experiment shows that for each pound of carbon which burns to carbon monoxide there are 4,450 B.t.u. liberated; and when this quantity of carbon monoxide formed burns to carbon dioxide 10,050 more B.t.u. are given off. On the other hand, for every pound of carbon that is burned directly to carbon dioxide there is effected a liberation of 14,500 B.t.u. Since the sum of 4,450 and 10,050 is 14,500, it is seen that the quantity of heat liberated is the same whether the carbon burns directly to carbon dioxide or first to carbon monoxide and then to carbon dioxide. The foregoing statements also show how important it is to burn all of the carbon completely to carbon dioxide. For every bit of carbon that has burned to only carbon monoxide there is obtained only approximately one-third of its possible heat capacity. Hence, the presence of sufficient oxygen to burn all of the carbon present to CO_2 is absolutely essential unless reducing conditions are desired. Reducing conditions in a kiln mean the presence of CO gas, which of course has a great affinity for oxygen and which will tend to combine with the oxygen contained in any substance with which it comes into contact. In other words, it tends to withdraw oxygen from whatever source it can and hence "reduces" the substance.

Under ordinary conditions, it may be said that when carbon is being burned at a certain rate, the amount of oxygen brought into contact with the carbon determines whether the carbon burns to CO or to CO_2. If sufficient oxygen or an excess quantity of oxygen be supplied to burn all of the carbon to CO_2, then that gas will be formed. If, however, there is not enough oxygen furnished to burn all of the carbon to the dioxide, then a mixture of both the monoxide and dioxide will be formed.

SURPLUS AIR ESSENTIAL

Owing to the fact that great difficulty is met with in obtaining contact between all of the carbon in the fuel to be burned and the oxygen of the air in ordinary furnaces and burners, a quantity of air in excess of the amount theoretically required to burn the carbon is always desirable if complete combustion is to be obtained. However, since the gases leaving the stack of a chimney always contain considerable heat, it is easily seen that if too much excess air is admitted a great part of the heat of combustion will be absorbed by these gases and carried out of the chimney.

It has already been shown that the CO_2 formed by the combustion of carbon has the same volume as the oxygen which is used in forming it. Therefore, if the air supplied in a given case just equalled that theoretically required for combustion to CO_2 and if all of the oxygen were utilized, the CO_2 formed would merely replace the oxygen in the air. Theoretically the proportions of the flue gas would in this case be 0.21 of CO_2 and 0.79 of N by volume. If real flue gases, obtained by burning carbon in the air, are found to contain less than twenty-one per cent. of CO_2, the combustion has evidently not yielded theoretically perfect flue gases. There may be either an excess or a deficiency of air. The presence of oxygen in flue gases will determine whether or not there is any excess air present; on the other hand, a deficiency of air will make itself known if there is CO in the flue gases.

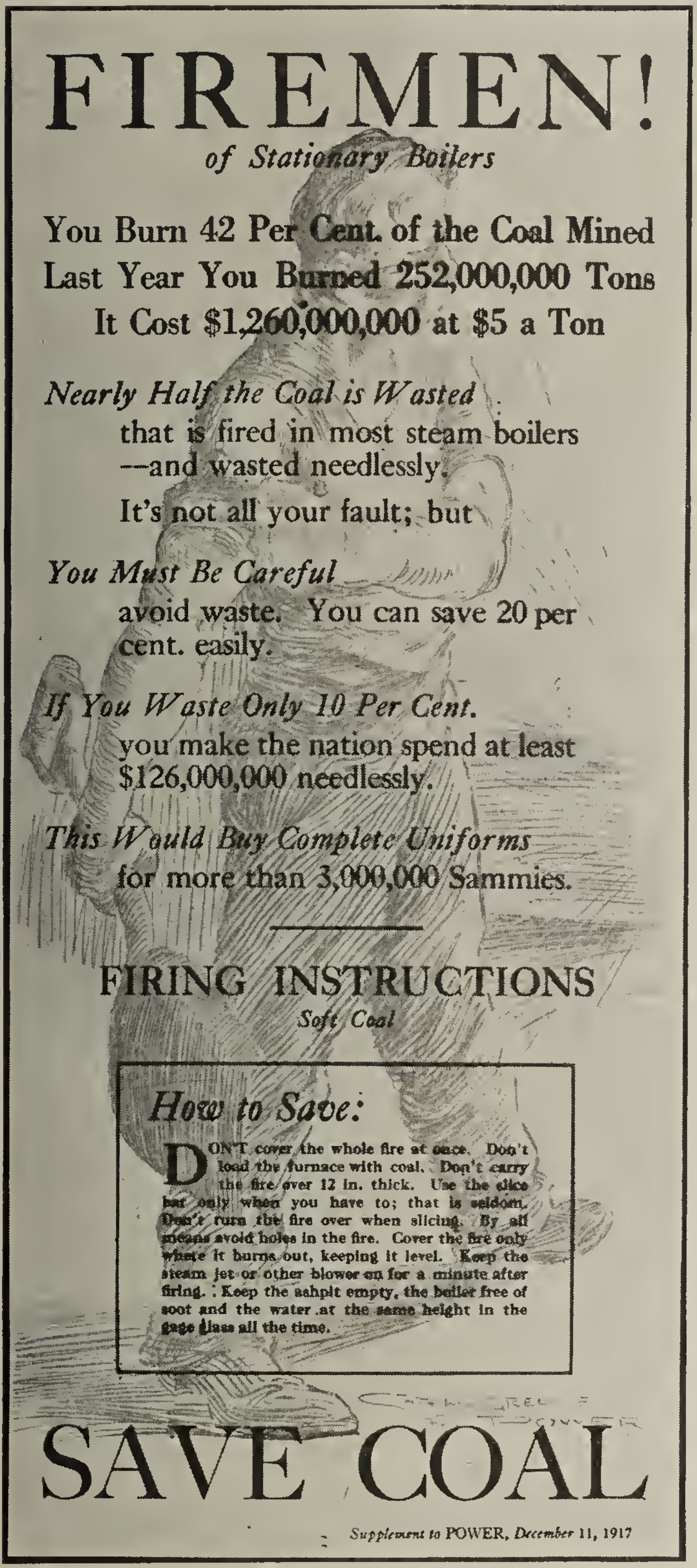
Hydrogen when it burns combines with oxygen in the proportion of one molecule of oxygen to every two molecules of hydrogen, to form water. This can be represented by the following equation:

$$2\,H_2+O_2=2\,H_2O.$$

In terms of volume this would be two volumes of hydrogen combined with one of oxygen to form two volumes of gaseous water, that is, water in the form of highly superheated vapor. As the water cools down it will ultimately reach a liquid condition and of course there will be a rapid decrease in volume, so that the volume relations hold true at only high temperatures.

The weight relations in the combustion of hydrogen can be calculated as in other cases, starting from the fact that four weights of hydrogen combine with thirty-two weights of oxygen to form thirty-six weights of water. The weights of hydrogen and oxygen are therefore in the relation of four to thirty-two, which equals one-eighth.

The heat liberated when one pound of hydrogen burns to water is equal to about 62,000 B.t.u. This is the quantity of heat that would be evolved if one pound of hydrogen were mixed with the proper amount of oxygen and burned and the resultant gases cooled down to the temperature at which the hydrogen was at the beginning. During the cooling of the gaseous water it would change to liquid form and in its condensation it would give up all of its latent heat of vaporization. This heat is included in the calorific value of the combustion of hydrogen as given above. In the case of the flue gases from a kiln the temperature is not low enough for the water vapor contained to condense and thus give off its latent heat of vaporization. When the vapor is not condensed the heat liberated is only about 52,000 B.t.u. per pound of hydrogen.



FIREMEN!

of Stationary Boilers

You Burn 42 Per Cent. of the Coal Mined
Last Year You Burned 252,000,000 Tons
It Cost $1,260,000,000 at $5 a Ton

Nearly Half the Coal is Wasted
that is fired in most steam boilers
—and wasted needlessly.

It's not all your fault; but

You Must Be Careful
avoid waste. You can save 20 per cent. easily.

If You Waste Only 10 Per Cent.
you make the nation spend at least $126,000,000 needlessly.

This Would Buy Complete Uniforms
for more than 3,000,000 Sammies.

FIRING INSTRUCTIONS

Soft Coal

How to Save:

DON'T cover the whole fire at once. Don't load the furnace with coal. Don't carry the fire over 12 in. thick. Use the slice bar only when you have to; that is seldom. Don't turn the fire over when slicing. By all means avoid holes in the fire. Cover the fire only where it burns out, keeping it level. Keep the steam jet or other blower on for a minute after firing. Keep the ashpit empty, the boiler free of soot and the water at the same height in the gage glass all the time.

SAVE COAL

Supplement to POWER, December 11, 1917

A Forceful Appeal to Firemen of Stationary Boilers to Save Coal, Which Presents Some of the Salient Facts Regarding the Fuel Situation. It is a Reproduction of a Supplement to "Power."

Many fuels contain compounds of carbon and hydrogen called hydrocarbons, which burn upon ignition to carbon dioxide and water. One well known compound of this type is methane (CH_4), which forms the greater part of all natural gas. For complete combustion the requisite amount of oxygen can be determined by the following chemical equation:

$$CH_4+2\,O_2=CO_2+2\,H_2O,$$

which shows that sixteen (twelve plus four) weights of methane combine with sixty-four (two times two times sixteen) weights of oxygen to form forty-four (twelve plus thirty-two) weights of carbon dioxide and thirty-six (four plus thirty-two) weights of water. If sufficient oxygen is not present the combustion will be incomplete and the following products will form: CO_2, H_2O, CO, and C in the form of soot, and other products which need not be considered.

The calorific value of hydrocarbons is assumed to be equal to the sum of the heat values of the carbon and hydrogen contained in one pound of the material, altho this value is somewhat higher than that found by actual experiment.

SULPHUR USUALLY ASSUMES BUT ONE FORM

When sulphur burns it may form several different oxides but under ordinary furnace conditions it is assumed to form only sulphur dioxide (SO_2). This reaction may be shown by the following equation:

$$S+O_2=SO_2.$$

Since the atomic weight of sulphur is thirty-two, the above equation means that equal weights of sulphur and oxygen combine to form the dioxide. The combustion of a pound of sulphur to form sulphur dioxide liberates 4,000 B.t.u.

In most cases the material burned is not a pure substance, such as carbon, hydrogen, methane, etc., but a fuel containing these substances as ingredients. Since air is generally used to furnish the oxygen, the products of combustion will contain not only the oxides of carbon, hydrogen, etc., but inert nitrogen as well. To burn completely one pound of coal in a boiler furnace requires about three pounds of oxygen or fifteen pounds of air. One pound of coal will make a solid cube with 2¾-inch edges. Fifteen pounds of air at atmospheric pressure and temperature occupies a volume of about two hundred cubic feet, which is approximately the volume of a six-foot cube. The volumes of these two cubes show the relative volumes of coal and air that must be fed into the furnace to obtain complete combustion.

If the combustion of any material were carried on in an apparatus which would not allow any heat to enter or leave it the products of combustion would absorb all of the heat liberated in the reaction. Each gas requires a certain amount of heat to raise its temperature thru one degree. Hence, by knowing the quantity and weight of each gas present and its specific heat the theoretical temperature of the combustion can be calculated. In ordinary combustion, however, part of the heat liberated is taken up in expanding the volume of the gases and some of it is lost thru radiation.

For Helpful Suggestions About
STOCK TAKING and INVENTORY
turn back to those issues of "Brick and Clay Record" which contained A. J. Huac's Articles on "Cost Accounting for the Clay Plant." They ran from August 15, 1916, to March 13, 1917, and are crammed full of material that will be of great assistance to you now.

If you have lost an issue or two from your file, breaking up the complete set of these excellent cost articles, write us; we may have those issues on hand.

PLACING *the* INDUSTRY ON *a* WAR BASIS

No Precipitate Action is Planned by the Commercial Economy Board to Stop the Production of Clay Products—Elimination of Unnecessary Lines is the Procedure to be Followed if Action is Taken

By Waldon Fawcett

EDITOR'S NOTE: Brick and Clay Record *has turned the searchlight upon the unofficial reports which state that the Commercial Economy Board of the Council of National Defense was preparing to take very drastic action in decreasing the production of clay products. According to the reports, which have gained wide circulation and which have caused great concern to many of the officials in the industry, the investigations of the Board uncovered the fact that in the face of a heavy decrease in demand for clay products, their manufacture was proceeding uncurtailed and the labor and fuel required in their production was going for an unessential purpose.*

Doubting the authenticity of the reports, we have had an investigation conducted "on the ground" and the following is the interesting and encouraging report received. It will undoubtedly be a soothing palliative for our readers. However, it would be well to read that part of the report bearing on the formation of a War Service Committee with especial attention. It strongly substantiates the position taken by Brick and Clay Record *in connection with the present national situation and its opinion of the measures which should be adopted for the protection of the industry.*

Another very vital consideration at the present time is that of dispatch in supplying the information requested by governmental bodies. In most instances, this information is sought thru the national associations, which, in obtaining it, must turn to the individual manufacturers. It is of greatest importance that such matters be treated with promptness and the information requested obtained and supplied in the shortest possible length of time. Laxness and a tendency to delay cannot do other than to work injury upon the industry.

WASHINGTON, D. C.—Because a number of leading executives in the clay products industry recently visited Washington and held a conference behind closed doors with the members of the Commercial Economy Board of the Council of National Defense does not justify the uneasiness, not to say alarm, that seems to have been created in some sections of the industry where the exact nature of the step just taken at Washington is perhaps not fully understood. Even if this be accounted the first move to place the clay products industry on a war basis there is nothing in that to precipitate panic in the industry nor to give rise to misgivings of undue interference by the government.

I have the assurance of the members of the Commercial Economy Board and likewise of the general officers of the Council of National Defense that no definite conclusions have yet been reached as to what will be sought to be accomplished in connection with the manufacture of clay products. The problem has been tackled, admittedly, but as yet the government has not gone into the subject very deeply, and it is felt that the situation is in no wise so acute as to require hasty action. Further conferences with manufacturers and dealers will probably be held during January, and as the outcome of these a letter of "recommendations" may be sent to the trade by the Commercial Economy Board. As yet no such letter has been sent out or prepared, reports to the contrary notwithstanding.

FIREBRAND REPORTS UNTRUE

Unofficial reports that have gone forth from Washington represent the Commercial Economy Board as aroused because manufacturers of clay products are reputed to have made no curtailment of production, altho demand is supposed to have slackened, thereby implying unnecessary employment of fuel and labor. As a matter of fact it is not the function of the Commercial Economy Board to worry over the use of fuel in the industries or to take steps to curtail such consumption. All that is left in the hands of the U. S. Fuel Administration, of which Dr. Harry Garfield is Director. Fuel Administrator Garfield has stated recently that as the war progresses some industries must be accounted less essential than others, and that it may be necessary to curtail the supply of fuel to some industries in order that munitions factories and other plants working on governmental war contracts may not be handicapped. When that dilemma presents itself, if it ever does, to the clay products industry it will come therefore from an entirely different quarter than from the Commercial Economy Board.

The Economy Board, as its name would imply, finds its function, primarily, in discovering leaks in merchandising practice, avoiding duplication of store delivery service and cutting out other non-essential services such as C. O. D. business, etc. All this is done, to be sure, in the interest of the conservation of man-power and raw material for war needs, but the Economy Board does not take it upon itself to attempt to divert labor. Rather, is it the aim and purpose to assist each industry to which it turns attention to gradually and without shock or jar, adjust itself to war conditions, setting about this readjustment forehandedly instead of waiting until the need is imperative and immediate. Furthermore, the Commercial Economy Board in all its work for the mobilization of industry—and the same is true of what will be done in the clay product field—aims to have the manufacturers of their own accord and with perfect harmony of action set their houses in order against the day when the "Business As Usual" sign must be turned to the wall.

WHAT THE COMMERCIAL ECONOMY BOARD IS

*In a summary of the first annual report of the Council of National Defense, Director W. S. Gifford says, concerning the above body, particularly with regard to the reason for its formation: "The Work of the Commercial Economy Board was to study and advise how commercial business might best meet the demands to be made on it by the war. The problem was to find out what activities within the various lines of business was nonessential, and to reduce them, or at least be prepared to reduce them. * * * The board's first undertaking was to stop wasteful returns on unsold bread to bakeries. * * * Another campaign was started to eliminate waste in delivery, thru cutting down two deliveries a day to one wherever possible, and to eliminate special accommodation deliveries, etc.*

UNNECESSARY LINES TO BE STOPPED

While the Commercial Economy Board is not yet ready to make any formal announcement on the subject, it may be said that in the main what this branch of Uncle Sam's war-making organization would like to see brought about in the clay products industry is just what, relatively, it has already brought about in industries such as shoe manufacture, the woolen and worsted trades, etc.; namely, the cutting out of unprofitable and superfluous lines. If the investigation of the clay products industry that is now in progress should disclose, as it has been disclosed in many another industry, that under the spur of competition manufacturers have put on the market styles, models, or grades of goods for which there is really not enough demand to warrant their existence, the Economy Board will probably suggest that it will be good patriotism as well as good business to cut out these "dead ends" at least for the period of the war.

It is realized at the Council of National Defense that the clay products industry is not one of those where unnecessary production is the crying evil it is in some lines of business. It is recognized too that there should be no derangement of the industry because so many of its products are genuine "essentials,"—essentials to the contractors who build sewage systems in miltary camps no less than to the farmers who need tile silos and drainage systems in order to produce and preserve the food that will win the war, and to the munitions plants which need refractory materials for lining their furnaces. So much agitation is now going on in favor of a more comprehensive system of highways for military purposes, and for offering relief to the staggering railroads that paving brick undoubtedly will also be stamped as an essential product. In view of all of which the assurance may be accepted that the Commercial Economy Board is not going to attempt by any radical or drastic measures to upset the industry, all reports to the contrary notwithstanding.

The course that the government will pursue with respect to clay products will, it is intimated to the writer, closely approximate the program that is now being carried out with respect to paint and varnish. Some time since the Commercial Economy Board was told that manufacturers of paint and varnish are now making a greater variety of shades, finishes, and grades than they feel is necessary to provide for the essential needs of the civilian population in war time, and furthermore that paints are being marketed in a greater variety of sizes of cans than is necessary. Accordingly, the Board is now conducting a "census" for the purpose of ascertaining the number of items on each manufacturer's list and whether there would be any objection to reducing the number of sizes, grades, etc., and, if not, what ones could best be eliminated.

Pending the development of the situation in the clay products field, the officials of the Council of National Defense dropped the hint that it will be decidedly for its best interests if the men in the clay products industry *can get into working order as quickly as possible a War Service Committee that will represent the little men as well as the big men in the industry* and would afford a point of contact between the clay products industry and all branches of the governmental organization—not merely the Council of Defense but likewise the War Industries Board, which has so much to say with respect to transportation privileges and other important subjects.

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Fred L. Dickey to Apply the Whip

Fred. L. Dickey, general manager of the W. S. Dickey Clay Manufacturing Co., in Kansas City, Mo., and former president of the Chamber of Commerce, has been appointed an official war "expeditor." A part of his duties will be to unravel tangles that threaten to slow down war work in any industry and for this work, his salary is $1 a year.

⁂

Get That Motor Truck Now

"For those business concerns contemplating the purchase of motor trucks, placing their orders without further delay is advisable," is the warning issued by truck manufacturers.

"The prominent place the motor truck now occupies in the industrial world, due to its efficiency in meeting the increased demands made on transportation departments, has doubled and trebled the purchasing of trucks, the extent of which has never before been known or even dreamed of."

SEND YOUR SUPERINTENDENT *to the* SHORT COURSE

The Country Has Been Combed for Experts to Teach You and Him the Fundamentals of Clayworking; and the University of Illinois Expects Your Support in This Constructive Undertaking

"I HAVE BEEN in the brick manufacturing game for seventeen years, beginning as water boy and working up until I have had the superintendency of several of the best yards in the state. When I learned of this opportunity at Urbana I made arrangements to get away from the plant, and while I had lots of practical experience, most of it has been fought for. The knowledge received at the short course puts me in a position to act without further experimenting.

"I found that during this course the instructors and students went to the root of plant troubles and they were brought out in such a way as to impress them upon the minds of those who attended. I believe that going to these short courses is much better than reading about them. In my present work I have a new yard and new clay and have shouldered the responsibilities of both. While I was fairly successful before taking this trip to Urbana, I feel that I have learned in the few days at this short course, what it would have taken me many months to have found out had I stayed at home."—*G. C. Huffman, Mexia Press Brick Company, Mexia, Texas.* The above is a letter taken from an article which appeared in the February 15, 1915, issue of *Brick and Clay Record* and which was written by one who attended the short course given at the University of Illinois then.

On January 7 to 19, another such short course will be given at the new ceramics school at Urbana, Ill., and every effort is being made to make it a better course than has ever been arranged before. An exceptionally good staff of experts in subjects kindred to ceramics will have charge of the course. Among these are included A. V. Bleininger, Dr. E. W. Washburn, D. T. Farnham, C. B. Harrop, R. K. Hursh, C. W. Parmelee, and many other noted ceramists

Every plant in the country should, if possible, have at least one of their men attend this short course. In the building material field this could be very easily arranged this year since most plants are not too busy but that they can afford to allow one of their men to attend. Paving brick manufacturers are in a similar position. For refractory manufacturers there will be more of interest in store for them than in any previous short course. Developments along the lines of refractory materials during the past year or two have been remarkable, and they will be treated at length. Director Bleininger of the ceramic laboratories of the United States Bureau of Standards will give lectures on this subject.

Every effort will be made to mingle the theoretical with the practical and show the connection between the two in such a manner that anyone possessing a common school education in addition to some plant experience can easily comprehend it. The course is designed to meet the requirements of practical men, and will deal with the principles underlying the work of managers, superintendents, foremen, burners, and others who may be concerned with the manufacture of clay products. The processes of clay testing, preparation, molding, drying, burning and decorating will be treated.

Persons desirous of testing their own clays may send samples of their materials to the Department of Ceramic Engineering, University of Illinois, Urbana, Ill., in time to be used by them in the laboratory work. Not less than twenty-five pounds should be forwarded, preferably in the condition as delivered to the pugmill or molding machine. All shipments should bear the name and address of the sender and should be marked "Short Course Sample."

Room and board can be obtained either in Champaign or Urbana at rates not in excess of the amounts commonly charged in other towns. Upon arrival at Urbana, each visitor should proceed at once to the Ceramic Engineering Building for instructions and advice as to rooms and boarding places. The information office, which will be in room 202, Ceramic Engineering Building, will be open from 7 a. m. to 12 M. and from 1 to 6 p. m. on Monday, January 7.

FIRST WEEK—JANUARY 7TH TO 13TH

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8-9	Registration and information Room 202 Ceramic Engr. Bldg.	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry
9-10		Origin and Classification of Clays	Prospecting and Sampling	Clay Testing	Steam Shovel Methods	Clay Testing
10-11	Address Dean Richards	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Clay Testing	Haulage
11-12	Physics and Chemistry	Winning of Clays	Explosives and Blasting	Winning of Clays	Fuels	Fuels
1-2	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry	Physics and Chemistry
2-3	Origin and Classification of Clays	Engines and Boilers	Engines and Boilers	Engines and Boilers	Ceramics and the War	Boiler Waters
3-4	Elective	Elective	Elective	Elective	Clay Testing	Clay Testing
4-5	Elective	Elective	Elective	Elective	Clay Testing	Clay Testing

SECOND WEEK—JANUARY 14TH TO 19TH

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8-9	Drying	Drying	Burning	Burning	Equipment Control	Elective
9-10	Kilns	Kilns	Legal Rights and Obligations	Refractories	Labor and Materials	Elective
10-11	Shaping	Shaping	Burning	Dynamos and Motors	Locating Machines	Elective
11-12	Dies	Dies	Gas Producers	Labor and Materials	Dynamos and Motors	Elective
1-2	Drying	Kilns	Refractories	Legal Rights and Obligations	Labor and Materials	
2-3	Clay Testing	Coal	Clay Testing	Labor and Materials	Elective	
3-4	Clay Testing	Gas Producers	Clay Testing	Refractories	Elective	
4-5	Clay Testing		Clay Testing		Elective	

The Above Program of the Two-Week Short to be Given at the University of Illinois is Convincing Evidence of the Great Scope and Value of the Work to be Covered. Last Year the Course was Not Given Because it was Not Properly Supported in Previous Years. The Manner in Which it is Accepted This Year Will Possibly Determine the Future of What is Without a Doubt One of the Greatest Opportunities Extended to Manufacturers of Clay Products Manufacturers. Be There When the Bell Rings.

SEWER PIPE SLABBING—ITS CAUSE *and* CURE

"Vitrification Slabbing a Myth" Writes One Plant Superintendent, in Commenting Upon the Article Entitled "Watersmoking and Vitrification Slabbing in Drain Tile and Sewer Pipe," Which Appeared in the November 20 Issue of BRICK AND CLAY RECORD. Another Writer Attributes the Presence of This Evil to Insufficient Pressure, While Still Another Points to the Pyrometer as the Means of Salvation

A COMPARATIVELY NEW THEORY regarding the source of slabbing in sewer pipe and drain tile was advanced in the article entitled "Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe," which appeared in the November 20 issue of *Brick and Clay Record*. Besides advancing a thought which previously has been given but very little attention as the cause of slabbing, the article recorded the discoveries and experiments made and the subsequent corrective measures which were taken and which effected a decided reduction in the amount of slabbed ware, as well as reducing the time of the burn considerably.

The new point brought out in this article was that slabbing occurs in the vitrification as well as the watersmoking period, despite the ages-old contention and long accepted theory that it has its beginning only in the early stages of the burn; that the slabbing was directly traceable to lamination in the pipe which was separated during the last part of the burn; and that the addition of grog to the body not only overcame the laminations and consequently the slabbing, but also, served to give the pipe a more open structure which made it easier for the water to gain access to the surface during the watersmoking period, thereby reducing the time previously required for this period.

To provoke discussion on the general subject of slabbing—a form of economic waste which war economy will not and cannot tolerate—*Brick and Clay Record* sent to several sewer pipe manufacturers and superintendents of plants, a letter asking them to contribute their ideas and experience with slabbing, its causes, and the proper measures to adopt in effecting a remedy. The following presents the substance of a few of the letters which we have received in reply to the letter first referred to and which we think is a quite worthy addition to the meager literature pertaining to this subject.

However, we hope that the few opinions which find expression in this symposium will not terminate the discussion upon slabbing of sewer pipe and large tile. Undoubtedly, as it is read by those of our readers engaged in the manufacture of these products, experiences will come to mind which, if published, would assist in the elimination of slabbing, blowing and other sewer pipe troubles. In a near future issue we hope to publish additional material on this subject and earnestly request that you relate your experiences if you believe that by doing so you can assist in eliminating slabbing.

"ALL SLABBING DUE TO WATERSMOKING"

The following excellent and exhaustive letter has been received from S. C. Karzen, superintendent of the American Sewer Pipe Co.'s plants at Uhrichsville, Ohio. Other interesting articles from Mr. Karzen's pen have been published in recent issues.

I HAVE READ THE ARTICLE on "Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe" with considerable interest, owing to the fact that I have had much experience with this type of defect. In investigating its causes and perfecting a cure, I have had the opportunity to conduct a few experiments during the last year; and altho they have been somewhat similar to those related in the article referred to, they have led me to far different conclusions.

No mention was made in the article as to the type of clay being used at the plant where the tests were made. There is no question but that different types of clay exhibit slabbing characteristics in different ways. By types of clays, I am referring to shales, fire clays, alluvial clays, etc. I presume that the particular clay under consideration was one of the western alluvial clays so much used for drain tile thruout the Middle West.

My own experience has been principally with shales and No. 2 fire clays used in the manufacture of sewer pipe. I find that invariably in the fire clay district, when a case of slabbing occurs, the large slabs are generally the result. On the other hand, shale pipe as a rule shows small slabs, which sometimes detach themselves from the pipe but very often adhere to the ware in much the same manner as do the vitrification slabs described in the article. This is probably due to the fact that most fire clays are finer grained and are much more sensitive to the initial watersmoking than is shale. My own experience, rather than pointing to vitrification and lamination as the possible causes of scaling of this type, has more than confirmed the original theory of watersmoking as a direct cause of all slabbing.

WATERSMOKING HEAT NOT HELD AT 212 DEG. FAHR

It must be understood that the watersmoking period is not merely confined to a range of temperature extending to 212 deg. Fahr. As a matter of fact this period actually includes the range of temperature running as high as 800 deg. Fahr —a temperature range generally covered before all the ware in the kiln can be considered completely dried, past the critical stage and ready for oxidation treatment. Very often kilns are held at a low temperature, say about 200 deg. Fahr. for lengthy periods, the burners believing that by this procedure they can overcome the danger of scaling. As a matter of fact, it is almost impossible to absolutely dry pipe past the danger point at any such low temperature and it is only by carefully increasing the heat at a moderate rate that pipe can be watersmoked with safety.

Setting Pipe as Dry as Possible Would No Doubt Help to Reduce to a Great Extent Slabbing Due to Faulty Watersmoking.

Before proceeding further, I would like to make a few comments advanced in the article under consideration. There is no doubt that all pipe are more or less subject to laminaton, which defect weakens the structure of the pipe. Most hollow ware is piston pressed, the clay generally being fed to the press by means of a belt conveyor, altho the more recent method of feeding clay is to have it dropped thru a chute from the clay elevator to the press. In the latter case, lamination is not so pronounced, but where the belt conveyor is used the clay is thrown to the far side of the cylinder. This tends to make the pipe more dense at different parts of its structure. It leads to an equal flow thru the die, causing lamination. Of course the die itself also tends to retard the flow of clay, causing the center of the pipe to travel faster than the outside.

VITRIFICATION TIGHTENS BOND

Pipe ranging from 24 inches to 36 inches in diameter are seldom over 2½ inches thick. Therefore, admitting that lamination is quite common in hollow ware, yet even the pronounced cases of laminated pipe seldom show more than one or two planes of cleavage. As the body approaches incipient vitrification, it commences to soften to a limited degree and the shrinkage increases. It is reasonable to suppose that the planes of cleavage or lamination which are present would actually become more thoroly knit, the body of the ware become denser, and the chances of parts becoming detached from the main body continues to shrink. Instead of scaling, the planes of lamination should become less visible and as a matter of fact, this is actually the case. If we examine a piece of soft burned ware, we note that lamination shows quite plainly. If we, however, break a well vitrified piece of sewer pipe we can note how the planes of lamination have drawn closer together, thereby allowing the entire body to become denser and more closely knit.

It is difficult to imagine that gravity can detach a part of the ware at the plane of cleavage during this stage of the burning. Shrinkage and viscosity would naturally tend to create a tighter bond rather than permit the outer shell to open up and detach itself from the body of the ware. It requires a considerable amount of pressure to rupture a body to the extent that occurs in scaled ware. In order for shrinkage to accomplish such a feat, it would be necessary for the outer shell of the pipe to shrink at a considerably greater speed than the inside of the ware. This would require a difference in temperature between the outer and inner shell of the ware; and I cannot imagine any condition such as this existing.

I believe that the writer draws the wrong conclusions from the experiments which he records. His first burn, which was a soft one and which was entirely free from blowing, was probably due to the fact that the kiln was watersmoked in good shape. Regarding his second experiment, however, I believe that the scaling did not show up until the kiln was at about a dark red heat. As I have already stated, the watersmoking often does not become complete thru the entire kiln of ware until the color commences to show. In fact, I have known cases of scaling to occur in the bottom pipe of a kiln when the top pipe were commencing to lose their water of dehydration, which is at about a temperature of about 550 deg. Cent. (1,022 deg. Fahr.) or well past red heat. I also know that it is extremely difficult to observe scaled pipe thru the crown cooling holes and, as a rule, the defect cannot be noted until the ware becomes quite bright, which may have been true in the case cited.

IS IT INCIPIENT OR VITRIFICATION SLABBING?

My own experience in the matter leads me to believe that all scaling is directly due to watersmoking. This scaling may be of the slab type, which is an aggravated case of blowing, or the small spalls and the curled up kind, which is merely an incipient case of scaling.

Where the kiln floors are badly choked up, unequal drafts are bound to occur. The kiln will then draw unevenly, and hot and cold spots will result. This may cause the steam to be expelled from one section of the kiln at a greater velocity than another. In consequence, spalling usually results, and the size of the slab is generally in direct proportion to the intensity of the draft at that particular point. Badly clogged bottoms are a rife cause of scaling.

Since watersmoking covers a rather wide range of temperature, scaling may occur even up to a dull red heat. I have had two cases come to my attention very similar to those outlined in the article under consideration, but from which far different conclusions could be drawn. A kiln of 24 inch standard pipe was set and fired. Owing to the flues being badly clogged, this kiln drew poorly, and after reaching a temperature of about Cone 1, we were forced to drop the fires and let the kiln cool. At this stage, the pipe had reached a flue hardness, and were not far from the finishing state. I inspected the kiln and found it completely free from scaling.

PIPE WELL WATERSMOKED, NOT SLABBED

After the flues were cleaned, the kiln was refired, and the burner rushed the burn thru from start to finish in three days. So rapidly was the kiln burned that a large proportion of the 24-inch pipe were cracked, due to rapid shrinkage and alternate heating and cooling in applying the fires. There was, however, no signs of blowing. I believe that inasmuch as the pipe were watersmoked in good shape, no matter how fast the burn was rushed, blowing could not occur. This particular case occurred at a plant where scaling was quite prevalent.

I have often set three kilns with ware made the same day. One kiln would show up badly slabbed, while the second might just have the small scales such as were attributed to lamination and vitrification, and the third kiln would be completely free from scaling. Inasmuch as the ware set in the three kilns was all made at one time, it, of course, would all be subject to the same amount of lamination. If the theory advanced were correct, all three kilns should be subject to vitrification blows. It is simply a case of watersmoking, in my opinion, the difference in results being sometimes attributable to the personal factor, or often to atmospheric conditions, and perhaps the construction of the kiln itself.

The use of grog for the elimination of scaling is a good scheme. There are several plants in the Hocking Valley district in Ohio which have been using grog for years and instead of adding this in the crushed state they generally use waste flue lining, and even waste glazed ware of light cross section. This material is added to the dry-pan regularly, in direct proportion to the remaining clay that is fed. The clay itself must be quite plastic, so as to be able to incorporate a certain amount of grog or waste at the press will likely result. However, clays which scale badly are usually highly plastic and tight grained.

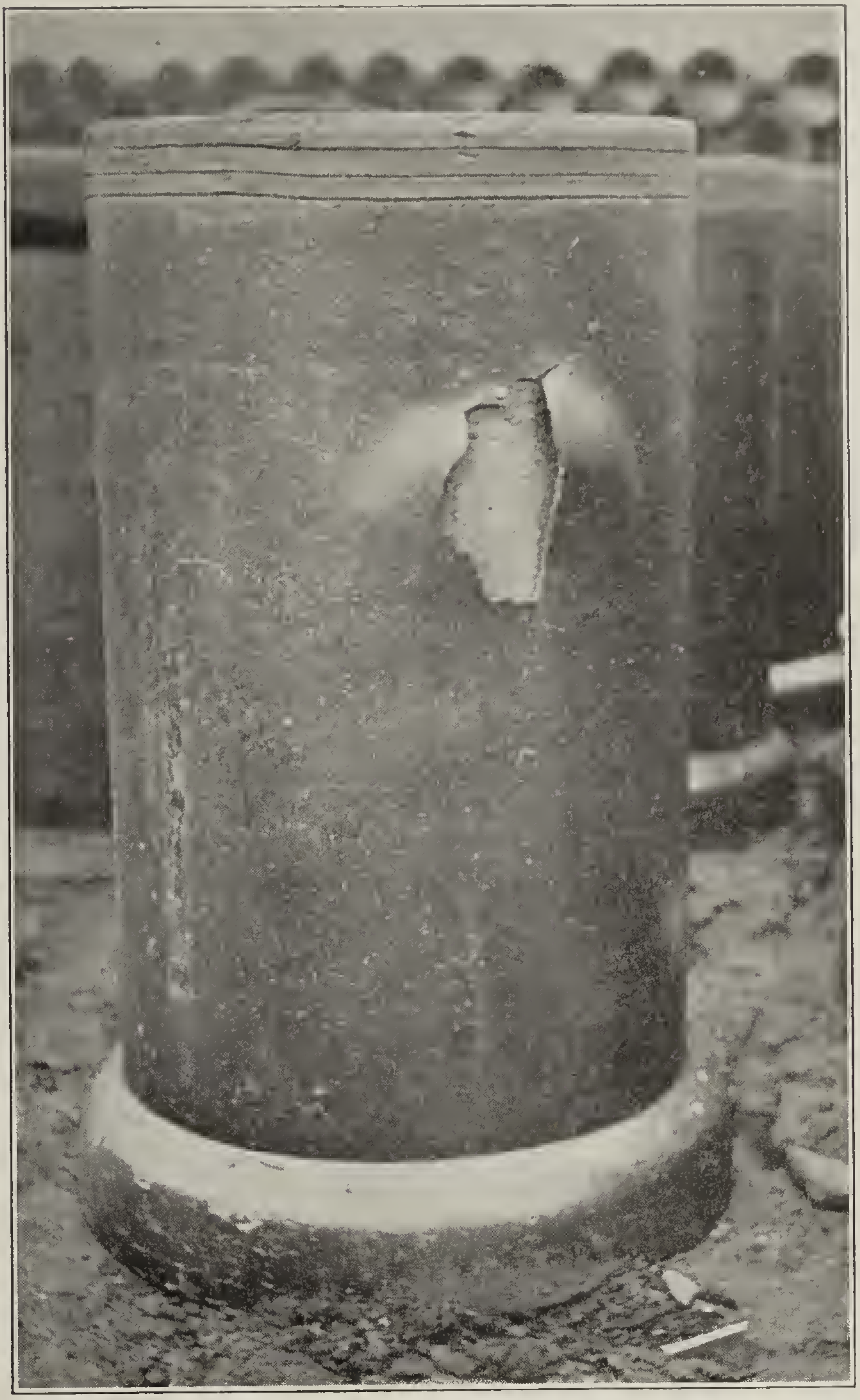
The use of grog to prevent blowing seems to me to substantiate the watersmoking theory. By grogging the material, the body of the ware is made more open and permits the steam to escape more easily and regularly, thereby facilitating watersmoking. In other words, an open body is much more easily watersmoked than a dense one, and consequently less trouble is encountered at this stage.

The theory that sharp grog reduces shrinkage is probably correct, but it prevents shrinkage uniformly thru the ware, and not merely at the surface. I disagree, however, with the theory that the sharp grog particles act as resistance at the planes of cleavage due to lamination.

Without in any sense wishing to cast any discredit on the conclusions arrived at in "Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe," still I feel quite safe in asserting that the original watersmoking theory is still the only reliable one, and that if we do not attempt to shave our temperature range too closely, we can eliminate most of the blowing trouble at the early stages of the burn.

INCREASE DIE PRESSURE TO REMOVE EVIL

"The article in *Brick and Clay Record* on 'Vitrification and Watersmoking Slabbing in Sewer Pipe and Drain Tile,' brings many theories to the mind of the writer," declares G. D. Morris, of the Evens & Howard Fire Brick Co., St. Louis, Mo. "I may be able to affirm the blowing during watersmoking, but I have not sufficient conclusive evidence to either affirm or deny the blowing during vitrification.



Blowing is Another Form of Economic Waste Which Can Not be Tolerated in These Days of Labor and Fuel Shortage. Herewith Are Sound Suggestions That Will Help Eliminate It, Also Slabbing.

"Considering the slabbing or blowing of pipe or tile as a burning question only, it is my opinion that the clay workers are still in their old rut; the analysis should be carried back farther, and it is up to the investigator to work from the other end, namely, the making of the ware.

"In the course of the last few years it has been brought very forcibly to my attention, with reference to slabbing and popping, that the construction of the dies for making the ware is of fundamental importance. Some experiments have been conducted along the lines of eliminating slabbing and popping by die construction, which tho not absolutely conclusive, tend very strongly toward the support of this theory.

"It is my opinion that a large percentage of blowing experienced in the manufacturing of pipe and tile is due to the weakness of the laminations which are always present. This is to say, these laminæ are not pressed together strongly enough to withstand the stress set up in the ware during burning. For example, take several strips of green clay and stick them together by hand, merely finishing the joints, and they will invariably be separated in the process of burning. Carry the analogy to the construction of pipe or tile, and unless the several layers of the ware are pressed very firmly together, it is very difficult to prevent a separation, and of course this separation takes the form of slabbing or blowing, by virtue of the nature of the formation of the layers. If the ware is subjected to greater pressure while the layers or laminations are still present—and perhaps even more of them—they are pressed together strongly enough to strengthen and reinforce one another sufficiently to withstand the burning stresses.

BURNING PERIOD WOULD ALSO BE REDUCED

"If we construct our dies so as to get a perfect flow of clay with sufficient pressure to compress it tightly, the writer thinks we would meet the blowing and slabbing conservatively, and at the same time shorten the burning period in proportion.

"In one instance of my experience, ware one and five-eighths thick made on a die of short finish popped and blistered at the press, as well as in the kiln. With 135 pounds boiler pressure, 120 pounds was registered in the steam cylinder when pressing the socket, but only 60 to 80 pounds was registered in the steam cylinder when pressing out the barrel of the ware, due to the fact that there was not sufficient resistance in the die orifice to permit the development of more pressure. This die was replaced with a long finish die, the resistance of which permitted the development of from 100 to 120 pounds pressure in the steam cylinder when pressing the barrel of the ware. Not only did the popping and blowing at the press entirely disappear, so that in a ten-hour run, not one pipe was lost from this cause, but the burning time was shortened nearly 20 per cent., with a corresponding increase in the percentage of No. 1 ware, practically eliminating the slabbing and blowing in the kiln.

LONG DIE LENGTHENS PRESSURE

"In a short finish die the pressure is moderate and the enclosed air will prevent the close union of the laminations and may even flow down past the momentary obstruction, causing a blow. A long finish die will keep the enclosed air pressed back up in the die and permit a longer pressure on the clay, thus joining the laminations much closer. In other words with a short finish die, the laminations are under a medium pressure for a short length of time, while with a long finish die, the laminations are under a high pressure for a much longer duration of time.

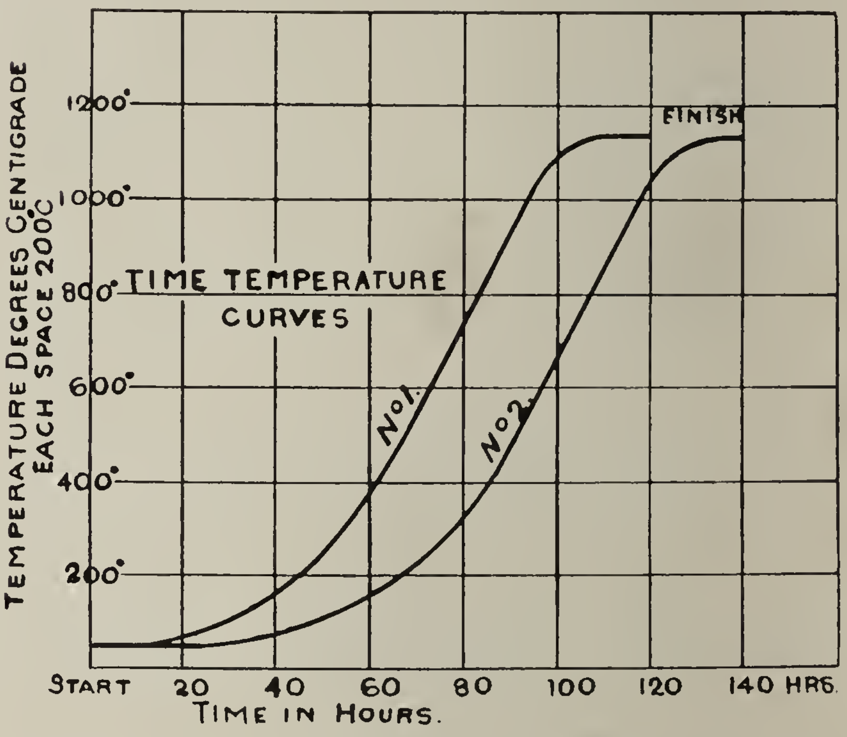
"Let us assume for the sake of argument, that in the example above, the unit pressure on the steam cylinder equals the unit pressure on the clay, and the finish of the die in one case being one inch and in the other five inches; that the clay flows at the same rate in both cases, say, thirty feet per minute, or one inch in one-sixth of a second. In the case of the die with the one inch finish, the clay is under a 60 to 80 pound unit pressure for one-sixth of a second, while in the case of the die with the five-inch finish, the clay is under 100 to 120 pounds unit pressure for five-sixths of a second. The argument may be advanced that in the latter illustration, stiffer clay was being pressed, but this is contrary to the facts; it is known that the clay was practically the same temper in both cases.

"While, as was stated above, I do not hold the evidence presented as entirely conclusive, it certainly tends to support my theories, and further experiments are being carried on at present which are confidently expected to give further proof."

PYROMETER STOPS SLABBING AND SAVES FUEL

"Under the pressure of war times it is the patriotic duty of every manufacturer, to make a special effort to eliminate all sources of waste due to careless and unscientific practices," writes A. L. Gladding, of the Gladding, McBeam & Co., Lincoln, Cal.

"The slabbing or spalling that has come under the writer's observation has taken place during the water-smoking period of the burning. In the section of California in which our plant is located, we have a rainy season which commences usually in the latter part of December and continues until about the first of April. During these months we experience considerable trouble in drying our large size pipe and have had slabbing to some extent, as at times the pipe are set too green. During the remainder of the year we do not have this drying trouble and consequently we rarely have slabbing.



Two Different Burning Curves Are Followed at One Plant. For Ware Set in Dry Weather the Kiln Curve No. 1 is Used, While for Ware Set in Wet Weather Curve No. 2 is Followed.

"It is quite probable that with some clay bodies slabbing takes place during the vitrification period of the burn. In our case we have never had losses occurring at this stage, due probably to the fact that our material has a high shrinkage and is difficult to dry, which has always made it necessary for us to open our large pipe body with the addition of about twenty-five per cent. grog. This grog content has undoubtedly saved us from vitrification slabbing.

"In the past three years by the use of a complete system of indicating and recording pyrometers we have been able to cut our slabbing losses down to practically nothing, and have also been able to make a very considerable fuel saving. In the burning of our large size pipe we use two time temperature schedules. One schedule is used during the dry months of the year when the pipe are set bone dry and the other, during the rainy season when they must be set somewhat green. Time temperature curve No. 1 in the figure shows the schedule used for dry pipe and No. 2 shows that used for green ware.

"Our kiln firemen are expected to follow very closely the schedules shown. These were arrived at after much experimenting and have been found to be very satisfactory for our conditions.

"It has been our experience that the installation of a system of pyrometers is the quickest, surest and easiest way to eliminate the great waste caused by slabbing and is also a great help in the stopping of unnecessary fuel waste. The first cost of such a system may in some cases seem heavy, but with the proper care and attention it will soon pay for its self many times over."

WAR POLICY *of* HIGHWAY CONSTRUCTION *and* MAINTENANCE NEEDED

WHAT WAS PROBABLY the best demonstration of the value of public highways as a means of relieving the transportation problems of the country now in war times and in the future in peace, was enacted last week when a fleet of thirty three-ton army trucks made a six-hundred mile run from Detroit, Mich., to Baltimore, Md.

Battling against heavy odds thruout the entire trip, the thirty trucks made the run in very favorable time. There were four officers and seventy-nine men assigned to the truck company, which was divided into three units of ten trucks each, with a sergeant in charge of each unit. The trucks were driven by soldiers, two being assigned to each one. Included in the train were two 250-gallon tankers, which supply the gasoline and oil wants of the trucks, and a kitchen truck to provide emergency meals enroute.

The trip was the result of plans formulated by the Quartermasters Corps and the Highways Transportation Committee of the Council of National Defense to move military equipment from the Central West to the eastern seaboard by motor truck. Each truck carried a load of military supplies for our armies in France.

From the viewpoint of the paving brick manufacturer, the most interesting feature in connection with this interesting experiment is the fact that it may be the opening wedge to a complete program of military highway construction. All of our great railroad systems are overburdened with an unprecedented amount of freight. Many have periodically called embargoes while they made frantic efforts to catch up with their shipments. Meanwhile conditions have steadily become worse, instead of better. If our transportation system breaks down, which it is in danger of doing, the safety of our nation will be at stake.

An enormous amount of freight could be diverted from the railroads to the highways, if good ones existed thruout the nation, but our great national transportation need finds us with only one tenth of our 2,500,000 miles of public highways available for heavy motor truck traffic.

Thousands of motor trucks must be brought to the eastern seaboard for shipment to our forces in France, and it is likely that before long the presence of motor truck trains on our highways will become commonplace. The difficulties encountered in moving this train of thirty trucks—an infinitesimal part of the thousands that the government must have—emphasize graphically the great need of improved highways.

Motor trucks, unlike many other kinds of military supplies, are capable of delivering themselves under their own power, and if the thousands of trucks, yet to be delivered. can be brought to the East independent of the railroads the vast array of rolling stock that would be required to haul them, may be utilized in transporting the enormous amount of supplies that must help to keep our forces in the field.

That congestion of steam railroad lines can be relieved and the freight situation cleared up by utilizing the highways for transportation purposes is receiving increasing official attention. Motor trucks can do the work just as satisfactorily and economically and in quicker time than can the railroads if given good roads to operate on. The great need at the present time is one for a military system of highways, as is expressed in a letter which Director Logan Walter Page, of the office of Public Roads and Rural Engineering, recently sent to the State Highway Department of Indiana.

(*Continued on Page 72.*)

The Thirty-Three-Ton Army Trucks, Which Made the Historic Run from Detroit to Baltimore, Probably Opening a Program of Military Road Construction, Are Shown on the Left Lined Up Before Starting. On the Right, they are Shown Traversing an Easy Strip of the Snowbound Ohio Highways.

BRIDGING *the* GAP *from* PIT *to* PLANT

Aerial Tramway on Pennsylvania Plants Prove Economical and Highly Satisfactory Means of Transporting Raw Material

AMAZED is the word that describes the sensation felt upon witnessing the operation and learning the facts about the aerial tramway employed by the Clearfield Sewer Pipe Co., which is located at a point two miles from Clearfield, Pa. The tramway serves as the connecting link between the company's fire clay mines and shale pit and the plant which is about 1,800 feet away, and it crosses on its way a railroad and a highway.

At a cost of $13,000, the tramway was built in the winter of 1914 and has been in continuous operation ever since without a single shut-down. The repair costs have amounted to only "two or three bills like seventy-eight cents."

This aerial tramway is of the type by which the clay is carried in buckets suspended on stationary track cables, supported every two or three hundred feet by wooden towers about forty feet in height. The cable which carries the loaded buckets is one and one-quarter inches in diameter, while the return cable is only one inch in diameter. Motion is imparted to the carriers by means of a light, endless rope of five-eighths inch diameter, to which they are connected. Since the pit and mines are located on a hill, there is a slight grade of about three per cent. downward slope toward the plant, which causes the endless, propelling rope to be operated by gravity. A five horsepower electric motor at each end of the system is required to overcome the inertia in starting it, but that is all of the power required to be furnished to operate the system—from which it is seen that the power cost is practically negligible.

Thirteen buckets are in use, eight of them being in motion (four going and four returning) two are at the loading terminal and three at the receiving station in the process of unloading. Each bucket has a capacity of nine hundred pounds of clay and about seventy buckets of clay are transmitted from mines and pit to factory during each hour.

In the operation of the tramway itself, only three men are required. The clay from the mines is dumped into a large bin and the man at the sending terminal simply runs the car beneath this bin and by opening the chute fills the carriage with clay. He them clamps the bucket on to the propelling rope by means of a special gripping device and the bucket starts on its journey to the plant. Here two men are required to take care of the unloading and sending. As the car comes into the terminal it passes by a detacher which loosens the clamp and thus releases the bucket from the propelling rope. It is then pushed on the track leading to the point of dumping.

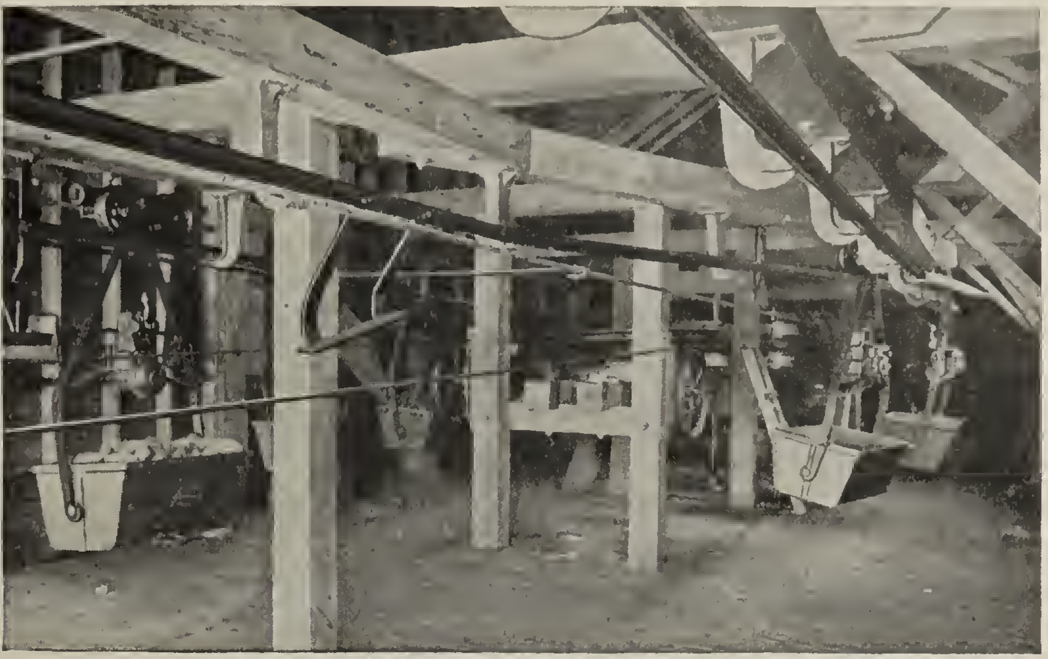
The operation is so simple, the labor required so small, the ultimate cost so little, and the upkeep so nearly negligible

Clay from the Mines is Brought in Cars and Dumped Into Bins in the Structure at the Left. The Lower Structure at the Right is the Transmitting Station.

that it is hard to realize why more tramways are not in use, at least under similar conditions.

Another tramway built on the same plan as that at the above plant is the one at the Bickford Fire Brick Co.'s plant at Curwensville, Pa. This tramway, however, has a much greater slope than the one described and for this reason it sometimes offers a little difficulty due to its tendency to run too fast. By connecting a special engine to the tramway this difficulty has been remedied to a great extent.

First class satisfaction is obtained even tho it is operating twenty-three hours during each day. In the morning three men at the receiving station keep seventeen carriers busy, while in the afternoon and at night only two men work at the unloading terminal operating twelve buckets. Only one man is needed to take care of the loading of the buckets.



The Detacher Which Locks or Unlocks the Gripping Device of the Bucket to or From the Conveying Rope is Illustrated in This View of the Receiving Station.

The Humphrey Brick & Tile Co., at Brookville, Pa., has a slightly different type of tramway system than is used by either of the above two plants. The proposition which confronted this plant was that the clay had to be transported a distance of twelve hundred feet to a level of one hundred and ten feet lower than the transmitting station. In this transportation the tramway crossed a railroad and a creek, the bed of which is forty feet lower than the point where the clay is delivered.

The Wire Net Serves to Prevent Any Material from Falling on the Roadbed of the Railroad Which is Bridged at This Point.

Only one car at a time can be sent over this system, since it is periodic rather than continuous. As a loaded car is sent over, an empty car returns on the parallel cable. Each cable in this case is two inches thick.

Ten cars of about 2,500 to 3,000 pounds capacity are in use. They are loaded at the clay pit by a small steam shovel and brought over to the sending station by rail where they are attached to the trolley which is suspended from the two inch supporting cable. A three-quarters inch wire rope operated by a fifteen horsepower gas engine serves as the motive power to propel the cars to and from the plant.

This tramway has now been in operation for four and one-half years and is giving excellent satisfaction. As an economical proposition it has saved the wages of two men and one horse over that which was formerly required. However, a lesson might well be drawn from the experience of the company in the installation of this tramway. When the tramway was first installed it was put up by the company itself under the direction of the engineer of the company furnishing the materials. Owing to the fact that the men erecting it were inexperienced, it was first built with materials that could not stand the strain of the heavy load. It thus became necessary to replace a great part of the apparatus with stronger parts. This, of course, added a great deal to the cost of the installation, but now that the experimental stage is over, no more trouble is had and the system works to perfection.

Where conditions are such as to allow its erection the tramway is, without doubt, one of the best and cheapest (in the long run) methods of transporting clay to a plant. It can be operated in all kinds of weather conditions and requires but very little power and labor. However, it is necessary to keep in mind that the slope between the pit and plant should not be too great, curves cannot be passed with the specific type of tramway referred to in this article, and the system should be installed by competent engineers.

The longest aerial tramway ever built has a vertical descent of 11,000 feet, carries forty tons of ore hourly a distance of twenty-one miles, and has spans exceeding half a mile in the clear.

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Fire Brick Plant Uses Clever Idea to Speed Up Lazy Workmen

A Pennsylvania fire brick concern inserted an advertisement in a local newspaper recently, calling for women to work at the plant. There was a two-fold purpose behind this move; first, to see how many replies would be received; second, to test out the effect such information would have on the plant's present employes.

The result in both cases, it is reported, exceeded all expectations. The company received fifteen applications from women, the majority of whom applied in person and were willing to start work right away. The men, seeing that the management was in earnest, got down to business at once with the result that lay-offs have been reduced to a minimum. In fact, the company is having very little trouble with labor and is operating the plant to nearly one hundred per cent.

IS *the* BUILDING MATERIAL ADMINISTRATOR NEXT?

CONDITIONS are rapidly shaping themselves in the metropolitan district of New York in such a way as to make necessary, soon or late, the appointment of a Building Material Administrator with prerogatives quite as comprehensive as those exercised by fuel administrators, according to The Dow Service Daily Building Reports today.

By way of anticipating such an emergency, and to assist in helping the government solve the problem in a more normal method, if possible, by applying the self-government honor system among building and allied industries, delegates who already have tentatively subscribed to the program of the Association of Building and Allied Industries of New York, together with approximately a hundred others, will meet in the afternoon of January 9 to complete the organization begun several days ago.

Administration officials at Washington are beginning to give consideration to the relation between housing and efficiency in munitions production. At Newport they are talking of commandeering the summer homes of the wealthy to find accommodation for ship yard laborers, and the Chamber of Commerce of the United States adopted resolutions on December 13 wherein they "most vigorously urge upon the head of every department of the government that immediate action be taken to solve this (housing) problem by, if necessary, diverting money from less immediately needed activities to the purpose of housing, knowing that the country will endorse and sustain such action. The necessity is for prompt and perhaps unprecedented action."

Simultaneously there come reports to the building material interests that the railroads are going to come into the market next spring for building material with which to enlarge their trackage, terminal, and dock facilities under the pressure of war time emergency. In the light of our importance as a world power after the war it is the plan of those in charge of this work to make the construction at the outset as permanent as speedy construction will permit. At the same time feelers are in the market now for building materials required in ship building, and contracts are being made for certain basic materials at levels much higher than those now ruling, in some cases, as far forward as August and September of 1918. While all this is being planned there are organizations being formed and others in the buying market now negotiating for American building materials for shipment to European countries beginning with February. Shipments have already been made in moderate quantities of certain building materials, like steel and Portland cement, to South America, which promises to become a strong market within a very short time for American building materials.

RESULT OF BRICK CENSUS NOT DIVULGED

But the domestic building interests who are taking, or who would like to take, contracts for government emergency construction work and for what little private building work that can proceed under the present unresponsive condition of the mortgage market, are beginning to wonder how they are going to get adequate supplies of building materials and to what heights building material prices will reach. The brick census along the Hudson has just been completed, but the total amount is not being divulged. For the purpose of showing the relation between prospective demand and actual supply, as applied to only one, but perhaps the most basic of all building materials, it is recalled that production of common brick in New York's greatest brick producing center is predicated upon the volume of building construction as shown by plan filings in the five boroughs of New York.

In 1916 the total number of new buildings for which plans were filed was 12,060. Probably not more than 60 percent of these went ahead. The surplus therefore was largely taken up by this difference and represents the amount of brick still available at the yards at the opening of this year. Labor shortage made production in 1917 much below normal. In 1917 the total amount of new building plans filed in that city will probably not exceed 7,000 new buildings, and of this number probably not more than 70 per cent became active building operations. By way of illustration records in Borough President Mark's office for Manhattan show that in December, 1916, plans were filed in the Manhattan department for 34 buildings the estimated cost of which was $4,022,850. In December just closing, up to the 20th, plans were filed for only 7 buildings the estimated cost of which totalled only $165,000, a loss of 96 per cent.

With such a showing in the volume of building construction this year, labor conditions last summer permitted manufacture only to the extent of providing fifteen per cent more brick than was required for last year's production to meet the emergency demand developing for 1918.

In the Portland cement market a new department is going to have great acceleration next year, making further levies upon cement mill capacities of the country, namely, concrete ships. Government highway maintenance is going to prove another important factor in the demand for this commodity. Ships of this sort of construction require steel. So do railroads and ship yards, both of which also require large quantities of lumber. Hospitals, warehouses, and similar buildings must be made fireproof, so hollow tile, plaster block, and reinforced concrete are being affected by practically the same conditions controlling brick and other basic commodities.

Building material interests foresee what is in the future in the matter of demand and a meagre supply. The announced intention of the administration to leave steel prices at present levels at the first of the year operates to accentuate the demand for other basic materials because well financed private or other work that has been held up awaiting 1918 structural steel prices will see the most formidable of obstructions removed from their estimating boards.

* * *

California Magnesite Production Jumps

The production of magnesite in California is placed at over 300,000 tons, valued at more than $4,000,000. This is double the output of the previous year and about thirty times of the amount mined before the European war shut off importations. Just about half of this output was burned in this state before it was shipped to eastern brickmakers and nearly all the rest was shippel in the crude state. This magnesite is of superior quality and is used in making brick without the addition of any foreign matter to make the magnesite stand up

FIRING GLAZES

Some Sound, Constructive Criticisms of America's Prodigal Methods of Burning Are Made in the Following Article, Written by a Belgian Manufacturer Whose Plant Was Destroyed in the Early Days of the War. A Distinction Is Made Between the "Fireman" and the "Man With the Shovel." Which Do You Employ?

By Armand De Gallaix

THE FIRING OF GLAZES, the operation of which gives to the ceramic product its special properties of beauty and resistance to deterioration, is the most important operation in its manufacture. It is evident that this fact has not been completely realized by all producers of ceramic ware.

I will state without reserve that the kiln, both for the biscuit and glaze burn, ought to be the best and most important "tool" of a ceramic plant, no matter what product is being manufactured. However, it is very seldom that this is the case. You do see, indeed, in the United States, plants which call themselves "modern" where the subject of first-class kilns has received very little attention. While the buildings, machinery and ordinary equipment have been the object of much research, the kilns are heritages passed down to us from the ancients. They are constructed without any preliminary study of construction and the purposes which it will serve. The kilns which have been used for past generations, regardless of their defects and poor features, are built without any changes in construction that might produce more efficient results.

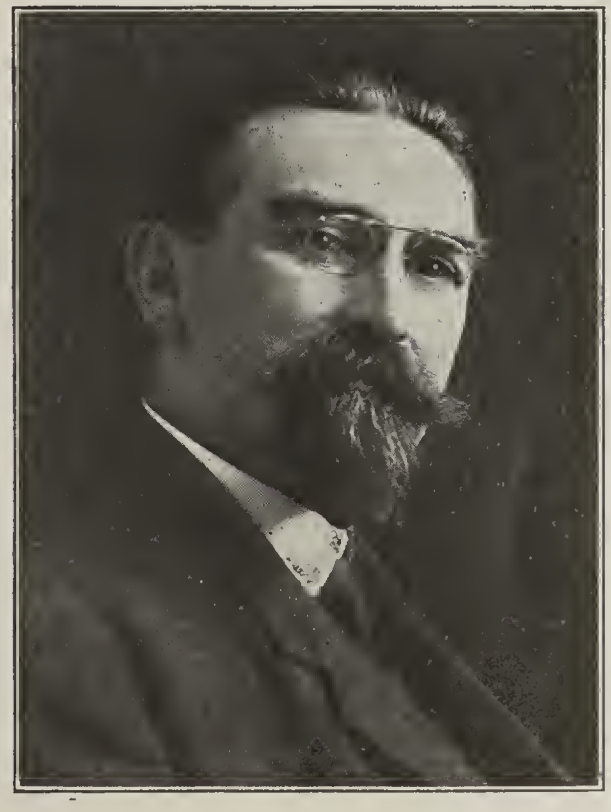
It should be a well intrenched axiom that upon the kiln depends the quality of ware. A poor kiln means poor ware; and of what value is fine raw materials, excellent bodies, good and well-chemically combined glazes if the firing, on account of a poor kiln, is not satisfactory? Many losses and failures can be attributed to the fact that the proper attention was not given to the efficiency of the kiln. Usually manufacturers realize this point too late and the profits which should accrue from an industry well conceived and properly conducted are lost, or only mediocre returns are obtained.

KILNS USED IN FIRING GLAZES

The firing of glazes can be accomplished in several kinds of kilns. Round muffle kilns of different capacities, intermittent open kilns, continuous kilns, and tunnel kilns are at present being utilized for this operation.

The continuous kiln has for a long time proved its efficiency and value to European manufacturers. The tunnel kiln is still in its infancy in the United States and will not be considered in what follows. In Europe this type of kiln, before the war broke out, was beginning to be be used on a large scale. But on the average plant the types of kiln used are the up and down-draft kilns, muffle kiln, or the open kiln. The up-draft kiln is too wasteful and too irregular in firing and must be positively condemned.

The fuels used in glaze firing are coal, crude oil, natural gas, and producer gas. The firing of kilns with crude oil is becoming obsolete in the United States on account of its high cost and inavailability. The same is now becoming true of natural gas which recently has become extremely hard to get. The use of producer gas is extensively employed in European factories and its success greatly exceeds early anticipations. The first attempts in the United States of utilizing this kind of fuel for firing glazes was tried a short time ago but the manufacturers as yet don't seem to have realized the advantages possessed by this ideal system of firing. The principal fuel in use in the United States at the present



ARMAND DE GALLAIX

time is coal, and therefore the following is presented upon the basis that coal is the fuel used.

The manner in which the firing of a glost kiln should be conducted depends upon the type of kiln used, the mode of firing, and (this is the point nearly always neglected) the *quality of the coal.* Just as in firing the biscuit burn, the firing of glazes is done in three different stages, each one of which requires its own method of treatment. However, the firing of industrial glazes does not present entirely the same aspects as does the firing of bisque. It is not essential, especially in firing glazes on biscuit, to start as slowly as in the firing of the biscuit or as in the once-fire process, where body and glaze are matured together. The time of slow fire can be largely shortened without injury to the ware and the fire can be increased more rapidly until the stage of hard fire is reached. This latter stage in the firing should be a more active one than the former. The third stage is the soaking period, during which the right temperature for maturity must be maintained to give the glazes their complete development and smoothness. The firing is then completed by decreasing the temperature somewhat, cleaning the fireboxes, and closing the doors and ash pits well, so as not to admit any air whatever.

The best kind of coal to use for glaze firing is the coal commonly called "soft coal." It should not be too bituminous and should contain from fifteen to twenty per cent. of volatile matter. The ash content of the coal when burned to a high temperature should not exceed fifteen per cent. In Europe the coal is sieved in the factory or it is purchased directly from the colliery in that form.

CONDITION OF KILN ATMOSPHERE IMPORTANT

The atmospheric condition of the gases in the kiln plays an important part in the successful firing of glazes. Except for some special colors and for porcelain, the kiln atmosphere should be oxidizing, which means that an excess supply of air must always be supplied to the fire. A reduced draft in the kiln and a thick layer of coal in the fire box will give a reducing atmosphere. It is, therefore, a good plan never to allow the kiln to fall down under the "neutral" atmosphere if it is desirable to prevent difficulties. It will be natural for the kiln to have a strong draft and this can be tempered in case of necessity.

Drawing from my note-book of experience, I believe that the best way to obtain good results in the firing of glazes in up-down draft kilns is to observe strictly the following points:

Have a regular time of filling the fire boxes with fuel. The greater the temperature, the more frequent should be the firing.

Use a uniform size of coal.

When firing see that the coal is shoveled on the grates in such a manner that the bed of fuel will be of uniform thickness.

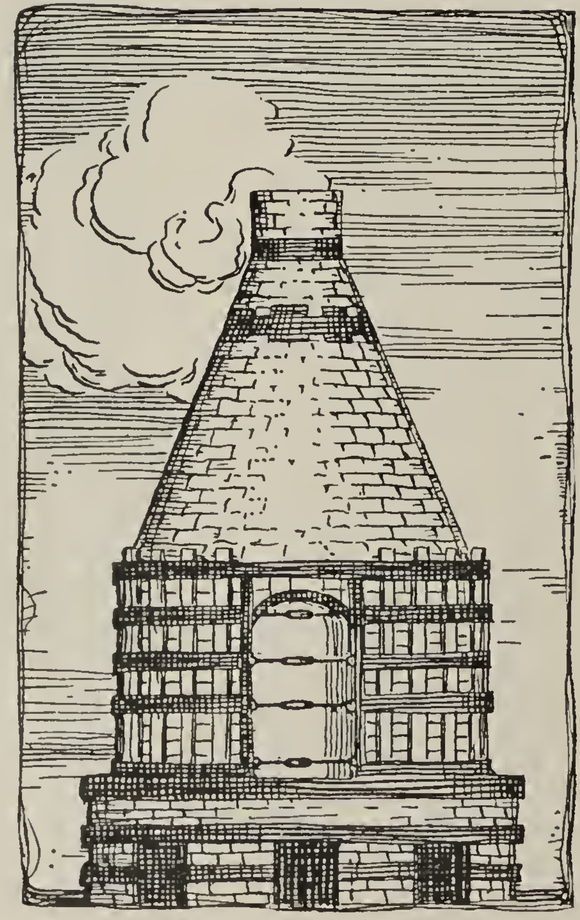
ENORMOUS WASTES

In the many American ceramic plants that I have visited I have noticed a decided lack of appreciation of the above fundamentals. *The time intervals between firing periods are generally too long,* and are not at all regular but rather capricious. The Americans do not use sieved coal and the fireman generally cares nothing about the uniformity in the size of the coal. He throws in the fire boxes dust, small nuts, and large lumps mixed together in almost all proportions by the six or seven large shovelfuls. His lone thought is to fill the fire box full of coal and fires his kiln much in the same fashion that a boiler furnace is fired. When the fire box is filled with unequal sizes of coal it burns with great irregularity, and not as easily as with an even mixed fuel. If the eight, ten, or twelve fire boxes of the kiln are filled in this manner a falling off of the temperature in the kiln is inevitable, and if this practice is repeated very often the irregular firing will very likely affect the glazes.

After loading his fire box with fuel, the fireman generally sits back in an arm chair to enjoy a rest of several hours. I hesitate to call such a workman a fireman but rather think of him as the "man with a shovel." The almost general custom of filling the fire box full of fuel, which is quite permissible for firing biscuit, is very detrimental and expensive for firing glazes.

The fire, especially in the second stage, necessitates a constant supervision and in order to get the complete heat value from the fuel the fires should be fed more frequently but with a less quantity of fuel. These principles, as said before, are entirely foreign to the average fireman, who is far from being careful in his firing. I believe that if the custom as followed in Europe where the fireman is given a greater remuneration for first-class burning, were instituted here, that it would result in better glaze firing.

The grates and fire boxes should receive a frequent cleaning so as to maintain a clear fire and to eliminate smoke. I have often seen the fire boxes full of ashes and clinkers which obstructed completely the regular draft and prevented the proper combustion of the fuel, which in turn resulted in a falling down of the temperature of the kiln and as a consequence a delay in the burning and maturing of the glaze.



A special supervision of the burn is necessary when the kiln begins to show a red color. The transition between the soft and hard fire is a moment of great danger and often a whole kiln of ware may be spoiled at this stage.

Tho the initial cost of an installation of an electric pyrometer is rather high, I am of the opinion that this apparatus is *indispensable* for obtaining a good control of the gradual ascending heat in the kiln.

CONES NOT SUFFICIENT

The finishing fire or the third stage in the burning of glazes requires a particular ability. This period is now determined largely by the use of pyrometric cones. However, it is not sufficient to use cones alone—it is absolutely essential to use, in connection with them, test pieces glazed with some of the colors which are being fired in the kiln. These can be drawn out of the different parts of the kiln by means of "spy holes." The use of cones as a guide for the proper moment to finish a kiln has some disadvantages. They do remarkably well in some cases but it is not at all unusual to see the cones down while the glazes are not yet right or sometimes a little over-fired.

Before the use of cones very few means of determining the temperature in a kiln were known. The old firemen used to finish the kiln according to the "tint of the kiln." You can readily conceive of the great experience required to be a good fireman and the great chance for mistakes, when the burning was done by eye. The whole fate of the kiln was dependent upon pure chance. However, the above condition of affairs is not much worse than what I saw in one plant which claims to be one of "America's leading factories" where *red glazed trial pieces* were used to finish a *glost* kiln!

As a summary, I will say that the losses caused directly or indirectly by the incompetence and carelessness of the firemen in charge of the hundreds of kilns in operation in the United States is enormous. It is therefore essential that a betterment of these conditions be brought about. It will not be an easy matter to do this because the firemen are generally averse to trying out any new methods of any kind. The manufacturers should insist upon the firemen being more careful and should use a recording pyrometer to check up on their burning. The firemen should watch this instrument and endeavor to bring about a gradual and uniform rise in temperature in the kiln.

He should also watch carefully the conditions of the cones and the colors on the glazed test pieces, so as to determine exactly the time when a complete and exact maturity of the glaze is effected. When the fireman has convinced himself of the fact that new methods are best and that better progress can be obtained by following them we shall have much better results with our glazes than it is at present realized.

New Clay Products Association Branch Formed

At a meeting of the Pacific Clay Products Association held in San Francisco, Cal., on December 10, this organization went out of business as an independent association. In its place was organized the Pacific Coast Branch of the Clay Products Association, whose headquarters are in Chicago. Thus, the local men become associated with the national organization. George H. Tefft, secretary of the Clay Products Association, was present and assisted the Pacific Coast manufacturers in the organization of the branch.

Representatives from the following firms were present at the meeting and took part in the proceedings: Gladding, McBean & Co.; N. Clark & Son; California Pottery Co., all of San Francisco; Pacific Coast Pottery & Terra Cotta Co., of San Jose; Los Angeles Pressed Brick Co. and Pacific Sewer Pipe Co., of Los Angeles; H. C. Muddox Co., of Sacramento and the Denny Renton Clay & Coal Co., of Seattle and Portland. The following officers and directors of the new organization were elected: George R. Chambers, chairman (which makes him automatically one of the vice-presidents of the national organization); H. C. Muddox, vice-chairman; Frank Costello, secretary, and George D. Clark, treasurer. The executive committee is composed of the officers with the addition of H. J. Crowe, V. E. Piollet, and E. M. Durant. The new branch includes almost every clay products maker on the Coast.

* * *

Chicago Show Postponed

The Contractors' and Builders' Show, which was to be held at the Coliseum, February 6 to 13, 1918, was postponed owing to conditions that have arisen which make it practically impossible to have a complete building exhibit, such as was planned, and one that would have assured a big attendance from which all would have profited.

Records show that practically all technical and business conventions and exhibits held since war was declared have been unusually well attended and successful, and the show company would have had no fear concerning attendance were it assured of such an exhibit as planned together with a big joint conference of all building industries, arrangements for which were well under way.

"We can go ahead with the show and make it a financial success from the standpoint of the management," the company stated in a letter to its exhibitors, "but have great doubts of being able to make it profitable to exhibitors. We also feel that an occasion of this kind should carry a message and render a service to the industries represented, and to the government, that will justify the time and expense involved."

The show company put the matter of holding the exposition squarely up to the exhibitors, staking all upon their decision.

As a result, under date of December 17, the company issued the following statement: "To date we have not heard from quite all, but as the large majority of those from whom we have heard favor calling the show off, we believe it is wise to act in accordance with this majority opinion, and announce without further delay that this show is indefinitely postponed."

* * *

Chicago Section Meets Second Time

Depite obstacles such as inventories, holiday season, and the absence of the chairman, all of which seemed to try their best to defeat the attempt to hold a successful meeting of the Chicago Section of the American Ceramic Society, on Saturday, December 29, seventeen ceramists showed up, and every one of them expressed themselves as being very glad that they came.

Professor Parmelee's paper on "A Review of Recent Ceramic Literature," brought to the attention of many of those present, articles of interest to them but of which they had never heard because of being published in not easily available sources.

Mr. R. R. Danielson's paper on "The Fitting of Enamels to Metals," showed the difficult problems which the enameling industry must solve and also pointed out how some of the defects and troubles in enamel are being combated. An interesting feature noted was that Seger's rules for glaze defects apply remarkably well in the case of enamels.

The general discussion following the above two papers which was taken part by nearly all of those present, proved to be intensely interesting as well as enlightening. Mr. C. A. Stone, of the Basic Products Co., Kenova, W. Va., startled those present by exhibiting pieces of dolomite refractories which had been treated so as to successfully prevent their hydration.

Ten new members showed up at this meeting, which brings the total membership up to twenty-four in the section.

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Thanks for the Remembrances

Again, friends of *Brick and Clay Record* have been very kind, remembering us with Christmas greetings and calendars. Among those who have extended their best wishes for prosperity and success during the coming year, as well as those who have mailed calendars are:

Denny-Renton Clay & Coal Co., Seattle, Wash.
Will P. Blair, Secy. National Paving Brick Manufacturers Association, Cleveland, Ohio.
Wisconsin Face and Fire Brick Co., Milwaukee, Wis.
Columbia Clay Company, Columbia, S. C.
Theo. B. Robertson Products Co., Inc., Chicago, Ill.
Crawfordsville Shale Brick Co., Crawfordsville, Ind.
Mr. & Mrs. A. F. Greaves-Walker, Tudor Hall, Baltimore.
The Los Angeles Pressed Brick Co., Los Angeles, Cal.
The Norton Co., Worcester, Mass.
The United States Motor Truck Co., Cincinnati, Ohio.
J. C. Steele and Sons, Statesville, N. C.

We have been favored with calendars from:

Roessler & Hasslacher, New York, N. Y.
Clay Products Association, Los Angeles, Cal.
Cincinnati Clay Products & Supply Co., Cincinnati, O.
Crawfordsville Shale Brick Co., Crawfordsville, Ind.
Watt Mining Car and Wheel Co., Barnesville, Ohio.
General Electric Co., Schenectady, N. Y.

We have also received a very practical and handsomely bound leather booklet from F. W. Morgan and Co., Chicago, which contains interest tables showing interest on $10,000 from one day to six months inclusive on the basis of 360 days a year.

A card has been received from Maruzen Co. Ltd., Tokyo, Japan, extending hearty good wishes for a happy New Year. *Brick and Clay Record* has a number of readers in the land of the rising sun, and in recent months interest in good American ceramic literature has increased to a marked degree, many new readers having been added to our list.

A very unique and attractive remembrance has come from G. P. Blackiston, a well known advertising man of Canton, Ohio. Mounted on a very choice piece of heavy book cover paper is a print of a photographic plate finished in sepia, showing a picture of Mr. Blackiston as well as some scenes in and around "Oakwood," the home of Mr. Blackiston as well as the office of himself and staff.

⁂

Go After the Smaller Orders

This is the time to use a fine-toothed comb and go after the small orders—from the man who wants a few hundred to a few thousand brick for porch columns, mantel fronts, a new chimney or brick and hollow tile for a garage, according to the view of the situation taken by some of the successful Louisville retailers. There are no big operations coming out for the face brick men to get busy on, but there is more than the usual amount of small work that is always under way at this time. It becomes a matter of readjusting sales operations to present conditions and the orders are comparatively easy to land. Deliveries make some trouble but one man has practically no advantage over another.

Beg Your Pardon!

On page 1146 of the December issue of *Brick and Clay Record* was published the following item:

"The Standard Brick Co., of Crawfordsville, Ind., recently filed a certificate of dissolution and will discontinue business."

In connection with this item we are in receipt of a letter from James R. Thomas, manager of the Standard Brick Co., stating that the above information is not correct. Mr. Thomas calls our attention to the fact that the Standard Brick Co. was recently reorganized for the purpose of enlarging its plant and has no intention whatsoever of discontinuing business.

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Edwin F. Knight, whose name appeared on page 1152 of the December 18 issue, as with the Buffalo Builders Supply Co., Buffalo, N. Y., objects to this association, stating that he is president of the Buffalo Clay Products Co., Inc.

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In the American Face Brick Association roster, particularly that part which appeared on page 1118 of the December issue of *Brick and Clay Record,* the name of R. R. Colburn, Colburn and Murray Brick Co., Minneapolis, Minn., appeared. Instead of the foregoing, this gentleman's name should have appeared as follows: R. R. Colburn, Colburn Brick and Tile Co., Minneapolis, Minn. Mr. Colburn advises that his firm is no longer known as the Colburn Murray Brick Co., but is now the Colburn Brick & Tile Co.

COMING CONVENTIONS

Jan. 7 to 19—Short Course in Ceramic Engineering at the University of Illinois.

Jan. 17 and 18—Northwestern Clay Association, at Minneapolis, Minn. Headquarters, West Hotel.

Jan. 23 and 24—Iowa Clay Products Association, Des Moines, Ia.

Jan. 29 and 30—Sand Lime Brick Manufacturers' Association, at Buffalo, N. Y. Headquarters, Lafayette Hotel.

Jan. 29, 30, and 31—Canadian National Clay Products Association, at Toronto, Ont., Can. Headquarters, Prince George Hotel.

Jan. 31 and Feb. 1—Wisconsin Clay Manufacturers' Association, at Milwaukee, Wis. Headquarters, Republican House.

Feb. 10 to 16—National Brick Manufacturers' Association, at Indianapolis, Ind. Headquarters, Claypool Hotel.

Feb. 10 to 16—American Ceramic Society, at Indianapolis, Ind. Headquarters, Claypool Hotel.

SPLITS

Planning Shipments Ahead Would Do Much to Spread the Supply of Splits Over All the Orders Calling for Them, and Eliminate the Danger of Shipping Them All at Once and Holding Up Other Orders Until an Additional Supply Could be Produced

By G. W. Greenwood, M. A. (Oxon)

Secretary United Fire Brick Co., Uniontown, Pa.

"ALL READY for our little road inspection trip, Mr. Baldwin?" asked the G. M., as they met at the foot of the elevator in the office building early one frosty morning.

"Yes, but I'll bet that it snows before we get back to the office," responded Baldwin.

"Nothing doing," answered the G. M., having glanced over his shoulder and come to the same conclusion himself. "I never bet. I don't believe in gambling."

"All I can say is that a fellow who doesn't gamble is no better," contended Baldwin.

"Here, I'll take you both up," said the efficient elevator man from the emerald isle, who facetiously explained on some occasions that his passengers were all of Irish descent. At other times they were of Irish ascent.

"Mike always has some sort of a retort," remarked Baldwin, as they walked along the hallway to their offices on the fourth floor.

"He doesn't have much on his dusky side partner who runs the second elevator," answered the G. M. "He was telling me yesterday that on account of the increase in the price of shoes, instead of buying one new pair he had half soled two old ones."

"All aboard," he continued, addressing Sellers as he entered his office, finding him running thru his morning mail.

"Pretty soon," said Sellers, piling the letters up neatly and laying aside his paper knife. "One thing that beats me is why these people are always buying splits, number ones and number twos, carloads at a time. We just shipped them a carload yesterday and here they are with an inquiry for another car."

"What!" exclaimed Baldwin. "Did that son of a gun of a superintendent ship out all those splits yesterday?"

"He sure did. He says he had an order for a car of splits and he had a car coming right out of a kiln. It's a case of ship right off the reel, turn the splits into money, or else put them into stock, tie up funds, and re-handle them later at additional expense when labor is scarce. It's the brick you ship which you get paid for, not the ones you put into stock."

"Looks like good logic to me," said the G. M. "What is your objection to that philosophy, Mr. Baldwin?"

"Adopting the Yankee method of answering one question by asking another, suppose a grocer had just about ready to put up and send out a dozen orders, each of which contained sugar. Suppose next some other customer were to come along just about that time and buy up all the grocer's supply of sugar. What would he do with the orders he was preparing to send out?"

"He would have a sweet time filling them, unless he could get another supply of sugar in a hurry," acknowledged the G. M.

BALDWIN EXPOSES FALSE REASONING

Folding his arms and looking sadly down at them from his six feet six, he explained, "If you run the gamut of our unfilled orders, for this plant, you will see a lot of them require splits. These orders are coming thru the kilns right now. Tell me this: When the Abingdon Iron Company's special shapes are ready to load, what will you do with them? There are only a thousand splits to go with this order, but for the lack of them, practically a car of stuff must be stocked until more splits are made up. And they need their brick and special shapes right away. When the man in the sleeping car complained that the shoes given him were not mates, the porter said what puzzled him most was that another passenger was in the same fix. With us, not merely one other, but several other customers are in the same fix. What's the idea of shipping one car direct from the kilns if half a dozen others must go into stock for several weeks? If this car of splits had been stocked, then as each of the other cars came out they could have picked up the splits required to go in the shipments and the cars would have moved out with no delay and no re-handling. The car of splits was not needed in such a hurry, so that we have not done this customer any special favor, while, on the other hand, we now will disappoint several other customers. Who wouldn't be blue over such a mix up? Where is the saving to us or the service to the trade?"

"I surrender, Mr. Baldwin, and desert the cause of the superintendent," said Sellers. "Only it does strike me that a plant superintendent has his hands full without having to attempt this detailed planning. He has all sorts of operating problems to look after—production, quality, repairs, stocks of supplies, labor, and other burning questions. When he has material coming from the kilns, the first order which it will fit is the one he seizes. Now the planning you refer to could be done only by some leisurely person, such as ourselves, more or less free from interruptions."

"Leisure!" exclaimed Baldwin, indignantly. "I'll have plenty to do by the time I pacify customers who will now have to wait for their brick on account of this split transaction."

"There's a lot in what you both say," agreed the G. M. "I know that when occupying the position of superintendent I had often to decide where a shipment should go without taking time to see what orders were ahead. There ought to be some better method of handling the situation. What suggestions have you?"

"Ask Barnes to take a whirl at it," said Baldwin, promptly.

"Good. It's just in his line," responded Sellers. "But now about these repeat split orders. They have me guessing. Why don't they buy straights and get more for their money, like the man who bought the largest pair of shoes he could get for the price, so as to get his money's worth?"

"Some time ago one of you suggested to me that it ought to be possible to use 12x6x4½ straights instead of 12x6x1½ splits," remarked the G. M. "Why could not one use 9x4½ x3¾ straights instead of number splits, 9x4½x4¼?"

"It would be decidedly to the advantage of the purchaser if they could use a fat nine inch straight instead of a straight and a split combined," replied Baldwin, "but I am afraid in this case the substitution would not work. They use these splits in their cupolas. As the lining burns out in spots they plaster it and then reinforce the plastering by imbedding splits in it, somewhat as concrete is reinforced with steel rods. They could not imbed straights or larger sizes so readily or so effectively."

SUGGESTING A SUBSTITUTE

"Why do they use high grade splits for this work?" asked the G. M. "I will venture a guess that splits made from good paving clay would give equally satisfactory results."

"They would be too brittle. They would snap off or spawl off with changes in temperature," suggested Sellers.

"Not unless they were vitrified," ventured Baldwin. "Burn the splits soft and they might be every bit as effective."

"As our friend Mike would say, one grade of splits would work just as well as the other, and a whole lot better. Anyway," went on the G. M., "we might as well have a try at it. You know the old epigram,

"There once was a lady said, 'Why
Can't I look in my ear with my eye?
  I really don't know
  Why it shouldn't be so—
You never can tell 'til you try!'"

"All right, suppose we try," assented Baldwin. "The more we can conserve the high grade brick, the better it is for all concerned."

"That reminds me," supplemented Sellers; "you know Jennings—used to be with the South Branch Iron Co.? Well, he and some other fellows opened a coal mine and bought a car of number two pavers for general use about the mine. Just after we had made shipment, he 'phoned in asking for a few thousand fire brick for lining the boiler fire box. I 'phoned him to use the soft burned pavers we had shipped in the car, instead of re-setting them. That way, he got fire brick for the lining of the fire box at just about the price of ordinary red brick."

"What if they do not work out satisfactorily?" asked the G. M. "You may get him in bad, and ourselves as well?"

"Because we have used nothing else at the paving brick plant for years, and they have always given a good account of themselves. And the service at his power station is not as severe as ours."

SAVING MONEY FOR THE CUSTOMER

"Say, do you know, that gives me an idea," said Baldwin, getting excited. "You remember when we sent a car of medium dense brick not intended for high duty, to the Chemical Reduction Co. They used some where they had before been using only a high duty brick. The foreman reported that the service they got out of the medium duty brick was about twice what they had previously been getting. He thought they were a higher grade brick, instead of which they were considerably cheaper. Let's look into all cases where a high grade brick is being used, and make sure that a less refractory brick would not give as good results."

"Good idea, Mr. Baldwin; go ahead and sprout another," encouraged the G. M., as Baldwin, becoming warmed up to the subject, drew off his gloves and tossed them on the desk at which Sellers was sitting.

"He ought to be able to sprout something," commented Sellers. "Just look at his hands. How did you ever get green paint all over them?"

Baldwin looked at his hands sadly. "I was whitewashing a fence green early this morning on my plantation, while the dew was still on the tree tops, and I ran out of paint. I am not yet much of a painter, but I sure got my hand in."

"When you found yourself running short, why didn't you get a hustle on and get thru before the paint ran out?" asked Sellers.

"That's a good suggestion," joined in the G. M. "When we find we are running short of raw material, we will just run the pan faster and get the day's run out before the material gives out."

"Don't let Barnes hear you making such a suggestion," admonished Baldwin. "He would promptly get out his knife, borrow your pencil, and proceed to show you how it could be done. Still, I think I would have had enough paint as it was if I only hadn't spilled so much on my hands."

DESIGN OF BRICK OFFERS POSSIBILITIES

"Speaking of spilling green paint reminds me of the man who saw some on the sidewalk and wanted to know if some Irishman hadn't been having a hemorrhage. But if we inaugurate a service department to determine what kinds of brick are best suited for the different uses to which they are put by our customers, how would it do to look also into the question of designs? In some cases I'm sure they are using special shapes or difficult pieces where standards could be used as well and where forms can be modified to our mutual advantage."

"And thus kill two birds with one stone, as the doctor expressed it when he called on two patients in the same flat," added Sellers. "There are certainly possibilities in it. I remember a set of interlocking shapes submitted to us a few months ago, where by a slight change in the dimensions the number of different pieces was considerably reduced. And the design was a great deal better, too. What's more, the customer was as delighted with the modifications as we were."

"We are making progress, all right, but we are not getting started on the road inspection trip," remarked the G. M. "Come runnin'."

A couple of hours later they were still pitching and tossing on a stretch of road which made the auto dance about like a ship in a rough sea. The road was full of large holes so close together that it was impossible to avoid them, and impossible to run faster than a walk for fear of breaking the machine.

"This road was constructed three years ago, at an original cost greater than the price of a brick road of the most improved type," jerked out Baldwin. "It is the best advertisement for a brick road which one could possibly put up."

"The condition of this road is literally unspeakable," concurred Sellers. "If one attempts to express himself while going over it, he is likely to bite his tongue off."

Arriving at last at a solid brick road, they pulled off to one side and all piled out, much to the astonishment of a farmer in the field by the roadside stacked full of shocks of fodder and covered with golden pumpkins. "Now I

(*Continued on Page 77.*)

HOW *to* REPORT NET INCOMES

A Few Concrete Examples Are Given in the Following Article to Show the Proper Manner of Reporting Incomes According to the War Revenue Act of 1917

By Ralph H. Butz

MANY THOUSANDS of business men, whose incomes or profits were not taxable under the previous income tax laws, will this year be required to file reports of their incomes or profits, which will be subject to tax according to the provisions of the War Revenue Act of 1917. These reports must be filed on or before March 1, 1918.

It is the purpose to give in this article a number of concrete examples of the manner in which the business man's income or profits will be affected, and also to interpret the law in such a manner that he will be enabled to make a correct return of his earnings for the year.

The liability for taxes on incomes and excess profits is covered by Titles I and II of the War Revenue Act, and the provisions contained under these titles are applicable to corporations, partnerships, and individuals.

In this connection the tax liability of corporations will be treated first. There are three separate taxes imposed on corporations, which are as follows:

1. Tax on Net Income.
2. Tax on Excess Profits.
3. Tax on Undistributed Earnings.

TAX ON NET INCOME

Under the law of 1916 a tax of 2 per cent. was imposed on the net income of corporations, and this provision still remains in force. However, the law of 1917 imposes an additional tax of 4 per cent. on the net income, as provided in Section 4. Thus the income tax for 1917 must be computed at 6 per cent. In 1916 a net income of $50,000 was subject to a tax of $1,000, while in 1917 the same amount of net income would be subject to a tax of $3,000.

TAX ON EXCESS PROFITS

The tax on excess profits is the one from which the government will derive the greater portion of revenue. Many industries have been greatly benefited financially as a result of the conditions brought about by the war. The excess profits tax is to be levied on the principle that the industries which have been benefited thru war conditions should therefore contribute a proportion of their increased profits to the government. However, the law as finally passed does not exempt a corporation or other form of business organization from paying the excess profits tax, whether they have received any benefits from the war conditions or not. If a corporation had an annual net income of $100,000 during the pre-war period, and its annual net income for 1917 does not exceed this amount, it will still be required to pay the tax on excess profits.

The excess profits tax covers all earnings since January 1, 1917; so that the first taxable year ends December 31, 1917, and for which period corporations must file their returns. However, if a corporation has fixed its own fiscal year, then the taxable year for such a corporation is the fiscal year ending during the calendar year of 1917. The amount of tax payable will then be computed on the earnings of the corporation from January 1, 1917, to the end of such fiscal year.

There are a number of methods by which the excess profits tax may be ascertained, but the first method mentioned in Section 203 is the one which will be used by those corporations whose invested capital and annual net income are definitely known. This method is explained in the following paragraphs, and a complete schedule with figures is given for ready reference.

Assuming a corporation with a capital of $100,000 having an annual net income of $50,000 for the year 1917. With these figures stated we may compute the tax in the following manner:

Schedule A

1.	Net Income		$50,000
2.	Deducting 9 per cent. of capital, the maximum deduction	$9,000	
3.	Plus additional deduction of	3,000	12,000
4.	Taxable net income		$38,000
5.	Tax on amount of net income in excess of deduction and not over 15 per cent. of capital....$3,000 at 20 per cent.		$ 600
6.	Tax on amount of net income in excess of 15 per cent. of capital and not over 20 per cent.—$5,000 at 25 per cent.		1,250
7.	Tax on amount of net income in excess of 20 per cent. of capital and not over 25 per cent.—$5,000 at 35 per cent.		1,750
8.	Tax on amount of net income in excess of 25 per cent. of capital and not over 33 per cent.—$8,000 at 45 per cent.		3,600
9.	Tax on amount of net income in excess of 33 per cent. of capital—$17,000 at 60 per cent.		10,200
	Total excess profits tax		$17,400
	Net income	$50,000	
	Less excess profits tax	17,400	
	Net income subject to 6 per cent. income tax	$32,600	1,956
	Total taxes		$19,356

Items 2 and 3 in the above schedule show that a deduction of $12,000 was made from the net income, thereby reducing the taxable income for excess profits tax to $38,000. This deduction is allowed according to Section 203 of the War Revenue Act, which is as follows:

"That for the purpose of this title the deduction shall be as follows: (a) In the case of a domestic corporation the sum of (1) an amount equal to the same percentage of the invested capital for the taxable year which the average amount of the annual net income during the pre-war period was of the invested capital for the pre-war period (but not less than seven nor more than nine per centum of the invested capital for the taxable year) and (2) $3,000."

This means in effect that if a corporation earned nine per cent. upon its invested capital during the years previous to the war, then it will be allowed to deduct nine per cent. of the amount of invested capital from the net income for 1917 before computing the excess profits tax, plus an additional deduction of $3,000, which is allowed in all cases.

Where the invested capital is large and the net income is small in proportion, the tax will also be less. Thus a corporation with a capital investment of $500,000, whose annual net income is only $50,000, would be allowed the deductions as shown below.

Net income		$50,000	
Deducting 9 per cent. of capital the maximum deduction	$45,000		
Plus additional deduction of	3,000	48,000	
Net income subject to 20 per cent. excess profits tax		$2,000	$ 400
Net income		50,000	
Less amount of excess profits tax		400	
Net income subject to 6 per cent. income tax		$49,600	2,976
Total taxes			$ 3,376

Items 5, 6, 7, 8 and 9 in Schedule A are covered by Section 201 of the War Revenue Act, which requires that the excess profits tax be computed on the following basis:

5. "Twenty per centum of the amount of the net income in excess of the deduction and not in excess of fifteen per centum of the invested capital for the taxable year;

15 per cent. of the invested capital	$15,000
Less deduction	12,000
Amount subject to 20 per cent. excess profits tax	$ 3,000—Tax, $600

6. "Twenty-five per centum of the amount of net income in excess of fifteen per centum and not in excess of twenty per centum of such capital;

20 per cent. of the invested capital	$20,000
Less 15 per cent. of the invested capital	15,000
Amount subject to 25 per cent. excess profits tax	$ 5,000—Tax, $1,750

7. "Thirty-five per centum of the amount of net income in excess of twenty per centum and not in excess of twenty-five per centum of such capital;

25 per cent. of the invested capital	$25,000
Less 20 per cent. of the invested capital	20,000
Amount subject to 35 per cent. excess profits tax	$ 5,000—Tax, $1,250

8. "Forty-five per centum of the amount of net income in excess of twenty-five per centum and not in excess of thirty-three per centum of such capital;

33 per cent. of the invested capital	$33,000
Less 25 per cent. of the invested capital	25,000
Amount subject to 45 per cent. excess profits tax	$ 8,000—Tax, $3,600

9. "Sixty per centum of the amount of net income in excess of thirty-three per centum of such capital."

Total net income	$50,000
Less 33 per cent. of the invested capital	33,000
Amount subject to 60 per cent. excess profits tax	$17,000—Tax, $10,200

The total amount of excess profits tax as shown by Schedule A is $17,400. This amount may then be deducted from the net income before the income tax of 6 per cent. is computed. This leaves a net income of $32,600 on which the 6 per cent. tax is computed, making a total income tax of $1,956. Adding together the excess profits tax and the income tax, the total taxes amount to $19,356.

TAX ON UNDISTRIBUTED EARNINGS

Section 1206 (b) contains the provision that "there shall be levied, assessed, collected, and paid annually an additional tax, of ten per centum upon the amount of net income remaining undistributed six months after the end of each calendar or fiscal year, of the total net income of every corporation, joint-stock company, or association, received during the year, but not including the amount of any income taxes paid by it within the year imposed by the authority of the United States."

This provision was no doubt inserted to discourage corporations from retaining in their hands large amounts of undivided profits which are not required in the direct operation of the business. This provision will tend to encourage the distribution of profits in the form of dividends to stockholders, at least during the period of the war.

But it is further provided that "the tax imposed by this subdivision shall not apply to that portion of such undistributed net income which is actually invested and employed in the business or is retained for employment in the reasonable requirements of the business or is invested in obligations of the United States issued after September 1, 1917."

It is easily apparent that if a corporation invests its undivided profits in United States Government bonds issued after September 1, 1917, the amounts of undistributed profits so invested will be free of tax; while if the amounts are invested in other kinds of securities, then the tax will apply.

There is also a provision that if a corporation retains undistributed profits for employment in the business, and does not so employ these earnings, then they shall be subject to a tax of 15 per cent. This provision is in the form of a penalty for attempted evasion of the 10 per cent. tax.

All corporations will have ample time for the proper distribution of their earnings, as the law allows six months' time from the close of the year for this purpose.

PARTNERSHIP TAXES

Under the previous income tax laws partnerships as such were not liable for income taxes, but the partners were required to pay tax on their individual incomes, which of course included their share of profits derived from the partnership. The War Revenue Act does not change this provision, and partnerships as such are not liable for income tax upon their net income. The partners must pay income tax if their share of profits is in excess of the deduction allowed by law for individuals.

Partnerships are liable for the excess profits tax. A partnership can make its returns for the fiscal year or calendar year, having the same privilege accorded to corporations.

(*Continued on Page* 73.)

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

Concluding the Discussion of the Principles Governing the Construction and Application of Combination Rates

By Sydney A. Hale

SYNOPSIS: Rates are either local or thru charges. If limited to stations on one line, the rate is local. If the movement is over more than one line, the rate is a thru charge. This thru charge may be either a joint rate specifically established by the assent and concurrence of the carriers participating in the movement, or it may be a combination of several independent rates. The present article concludes the discussion of the principles governing the construction and application of combination rates.

A COMBINATION RATE applied to transportation over a thru line is as binding, definite, and absolute as a joint thru rate and all the conditions, regulations, and privileges obtaining as to any factor in such combination rate for thru shipment at the time of initial shipment upon such combination rate must be adhered to and can not be varied as to that shipment during the period of transportation of such shipment to its final destination.—In re Thru Routes and Thru Rates, 12 I. C. C., 163.

COMBINATION RATE LIMITATIONS

Where there is a published thru rate, that is, where the charge between certain specific stations is definitely named, the territorial application of such a rate offers little difficulty. Commerce, however, refuses to invite the business paralysis that would ensue if traffic were limited to movement under joint thru rates. Where such a rate does exist, the question ends—it is the only charge that may be lawfully exacted for the movement it covers. As has been seen, in the absence of this joint rate, the traffic will move upon a combination of various independent rate factors.

Movement, even under a combination rate, may, nevertheless be subject to restrictions. Proportional rates and the limitations upon their use constitute one of the most common, but by no means sole example, of such restrictions. Carriers may, if they choose, specify in their tariffs how combination rates shall be made and, under such circumstances, the prescribed mode is as binding as tho a specific thru rate had been made.† It is only in the absence of both the specific thru rate and a specific manner of constructing combination thru rates that "the lowest combination of rates applicable via the route over which the shipment moves is the lawful rate for that shipment."

PRINCIPAL METHODS OF MAKING RATES

To understand the various individual tariff restrictions upon the use of combination rates, knowledge of the fundamentals of rate-making is necessary. Territorially speaking, there are three principal methods of making rates, viz., the mileage, the blanket, and the basing point systems. No one is controlling, altho the 1910 amendments to the fourth section of the Act to Regulate Commerce have a tendency to give the mileage system a more predominating influence as time goes by.‡ In many rates, the mileage and basing point systems are closely interwoven.

The best example of the mileage scheme is found in the rate structure in effect between New York and Chicago. The basic rate is that applying between the two cities named. Rates to and from stations in the intervening territory are fixed upon a percentage of the New York-Chicago rate, that percentage being determined by the relation their distance bears to the distance from New York to Chicago. While competitive influences have operated to cause some slight modifications, for the most part, the integrity of the mileage rate system has been well maintained in this territory.

Under the blanket system, a large number of producing or consuming points are grouped together and one rate applied to or from such points. Until within the last few years, the same rate applied from practically all the territory east of the Missouri River to points along the Pacific Coast. Rates to and from a large part of the state of Texas are blanketed, the points being known as Texas common points. The same is true of many stations in Colorado and Utah. Probably the most natural and beneficial instances of blanketing are found in cases of lumber and coal areas. Rates from different points in a producing district will be made the same to a common market, altho one camp or mine may be 100 miles or more nearer the market than another in the same group.

FUNDAMENTALS OF THE BASING POINT SYSTEM

The basing point system rests upon the selection, thru natural or artificial causes, of certain stations as rate-making or breaking points. For example, the Mississippi, Missouri, and Ohio Rivers present natural geographic barriers. Railroad lines would end on the river bank and other systems would terminate on the opposite bank. It was natural, before the joint thru rate principle was fully developed, that carriers would publish individual rates up to the rivers and that traffic crossing the streams would move upon rates made in a combination. So, too, certain rivers constitute part of the boundary lines between different classification territories and the variations in classifications operated to cause the rates to break at such boundaries.

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† The question of conflict between specific and combination thru rates is reserved for discussion in a subsequent article.

‡ Prior to 1910, the inhibition against charging more for the shorter haul was qualified by "under substantially similar circumstances and conditions." So many factors were held to create dissimilarity that the law was a dead letter. The 1910 amendments eliminated the vitiating phrase.

With many western lines having their eastern termini and eastern lines their western termini at Chicago, it is come about that that, too, is a basing point for rates. In the same manner, other cities, converging points for eastern and western or northern and southern systems or the outposts of trade advances into new territory, such as Kansas City in the commercial development of Oklahoma, have become basing points for the construction of rates.

The basing point may be considered in two lights. First, we have it as a rate-breaking point, as in the case of rates from the East to the Missouri River, where the normal method of rate-making is a combination of rates from the point of origin to Chicago or a Mississippi River crossing, plus a local or proportional from Chicago or the river to the Missouri River station. Second, we have the basing point as the center about which rates to other points group.

Rates to such related points may be either the same as or made with a fixed relationship to the base point rate. As has been explained, in constructing rates from the Atlantic seaboard westward, Chicago is the important base point. If the rate from New York to some point near Chicago is the same as the rate to Chicago, then that point is spoken of as a Chicago rate point. If the rate is made by deducting or adding fixed sums or percentages to or from the basing point rate, rates to such points are said to base upon the base point. The additions or deductions are called arbitraries or differentials. For example, in constructing class rates from Boston, Philadelphia, and Baltimore to Chicago, Boston takes the New York Rates, while Philadelphia and Baltimore take fixed differentials under the New York Rates.

USE OF BASING POINTS IN COMBINATION RATES

A clear understanding of the basing point system is especially valuable when the question is one of combination rates. Where construction of such rates is not limited to certain base points, many factors enter into the selection of the route carrying the lowest rate. For example, where the point of origin or destination is directly intermediate to a base point, the rule is that, if the lowest combination makes on such point, such combination must be applied.

To understand the workings of this rule consider a movement from A to C. From A to D, a point 25 miles beyond C, a specific thru rate is in effect. Local rates are published from A to B, from B to C and from D to C. The normal method of constructing a thru rate from A to C would be a combination of locals on B, but, if the rate from A to D plus the rate from D to C made a lower charge, then this combination on D would apply, altho such application would not require the carrier to haul the traffic thru C to D and back to C again.

Where the combination is of a joint rate applying to several points and a local which varies as to these different points, the rate must be based upon the point that will give the lowest thru charge. For example, Chicago and Milwaukee take the same rate from New York. If a receiver of freight is located at some western point to which no specific thru rate applies, but which takes a lower local rate from Milwaukee than from Chicago, he is entitled to base his combination rate on Milwaukee.

* * *

HULTS JOINS AVIATION SERVICE

Resigning his position as general manager of the North Iowa Brick & Tile Co., of Mason City, Iowa, Eugene A. Hults has enlisted in the signal corps and is now in the employment of the engineering department at Washington, D. C.

Mr. Hults' record in the clay products manufacturing industry has been one marked with great success and his loss will undoubtedly be greatly felt. For three years he has occupied the position as manager of the big Mason City company, and when he terminated his relationship with that concern he left a most enviable record. At the time he took hold the company was practically at a standstill and had not been able to pay dividends for a number of years. In three years' time, besides making it a good paying institution, he paid up all back dividends and reduced the bond issue against the property.

Earlier in life, Mr. Hults was employed by the General Electric Co. installing turbines and electrical equipment, and after spending two years in the testing department he went with the Universal Cement Co. at Buffington, Ind. During his employment with that company he was head engineer in charge of all the electrical operations and had about 15,000 H. P. and motors and other electrical equipment under his charge.

He is a graduate of Pratt Institute, of Brooklyn, and has taken a postgraduate work at the Columbia University, N. Y. With such a redoubtable equipment there can be no question that Mr. Hults will prove of great value to Uncle Sam in the prosecution of the work in the signal corps. It is a greater call which takes him from the clay industry, but we look forward to the time when his name will again be included upon the roster of progressive successful clay products manufacturers.

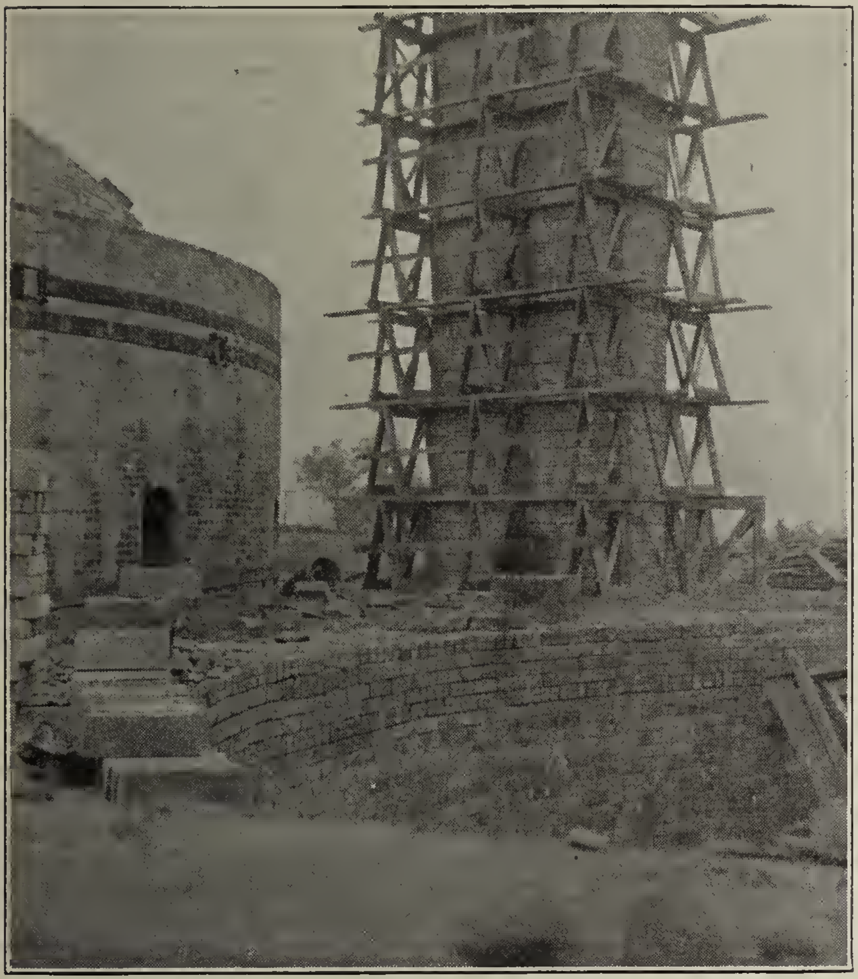
EUGENE A. HULTS

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

Stack Theory and Construction—and Data

Stacks or chimneys for power plants and kilns serve two special purposes. They produce the draft required for the proper combustion of the fuel and furnish a means of disposing of the spent gases of the furnaces. The first purpose is the most important one as far as clay products manufacturers are concerned, since it is quite certain that in no other industry does draft play such an important part in the length of the burn, the quality of the ware obtained, and the colors and textures produced as in the clayworking industry. A. E. Williams, in his paper on "Proper Draft Conditions in Burning Kilns," published in the July 31 issue of *Brick and Clay Record,* has discussed quite fully the importance of draft and emphasized the need of good draft especially during the watersmoking period and the advantage of having a wide range of control.

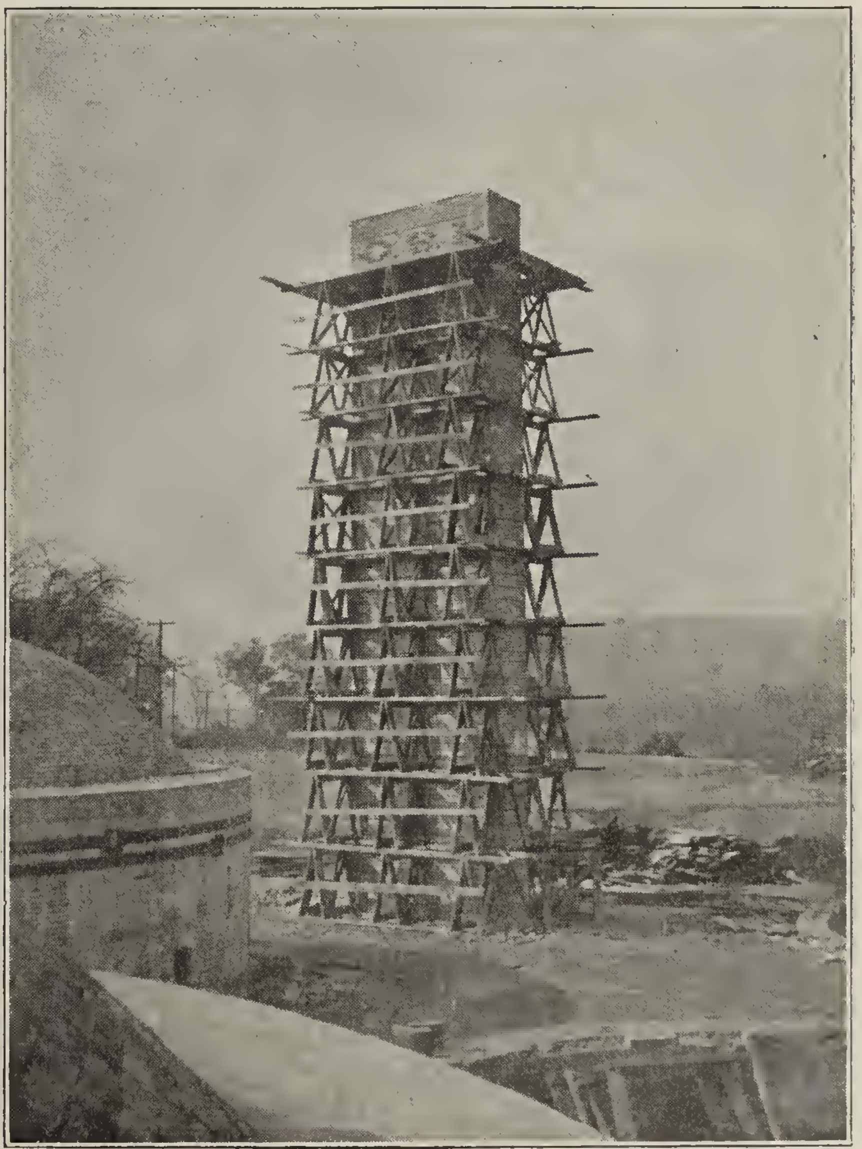


Details of the Scaffolding for the Erection of a Kiln Stack Are Plainly Shown in This Near View. Both Strength and Simplicity Are Possessed by This Framework.

Chimney draft is due to the difference of temperatures of the gases in it and of the outside air. Contrary to the popular opinion chimney draft is not due to suction but is really a push. Thus when the hot gases or products of combustion enter the chimney they are lighter than the outside air because they have expanded after being heated and consequently have less density. Since they are lighter these gases rise to the top of the chimney and other gases rush in to take their place. The latter gases then become heated and as they become lighter, also rise toward the top. In this way a constant circulation is obtained. The force of the draft obtained is equal to the difference in the weight of the column of gases in a chimney and the weight of a similar column of outside air. From this it is seen that the force of draft obtained is dependent upon the following three items: temperature of the gases inside of the chimney and of the outside air, height of the chimney, and area of the chimney.

The first fact is true when it is remembered that the gases upon being heated expand, the amount of expansion being directly proportional to the degree to which they are heated, hence they become less dense. According to this, the hotter the chimney gases are, the greater should be the draft. This is generally the case but it is not absolutely true.

The height of the chimney of course has a very important bearing upon the strength of the draft. A high chimney naturally means a high column of gases which, as pointed out before, determines to a great extent the amount of draft.



Building a Satisfactory Supporting Framework—One Which Did Not Become Too Complicated and Clumsy Upon Reaching a Tall Height, from Which to Build Up a Chimney, Was the Problem Solved Here.

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Brown, Black, Red and Buff Strongest and most durable
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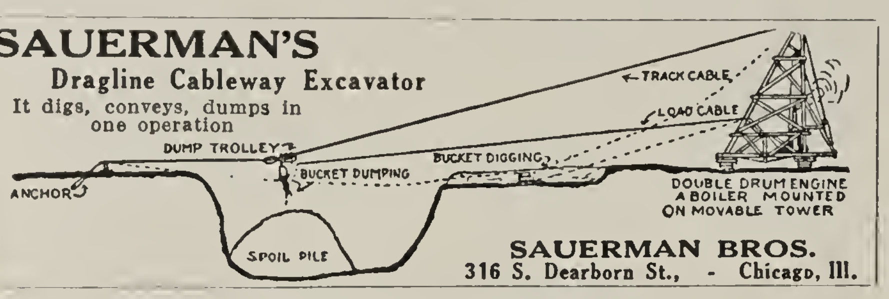
It digs, conveys, dumps in one operation



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The Restaurant Prices Are Most Moderate
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Brick and Clay Record

A frequent mistake is made in constructing the chimney too low.

The area of a chimney, as in the case of the height of the chimney affects the draft because of the fact that it adds or detracts from the size of the column of stack gases. In boiler practice there are several empirical formulas used in finding the area of a chimney corresponding to certain heights but with kilns a knowledge of conditions is really the only plan by which one can be guided.

Some kilns have several stacks connected to them, some have only one stack, and frequenty several kilns are connected to one big stack. We will not attempt to discuss which plan is the best one to follow but each has its own advantages and much of course depends upon the conditions. However, it might be well to mention here that it has been a common mistake with multiple stack kilns that they have too many stacks; and especially is this true of the earlier kilns of this type. In such cases a number of the stacks will "back draft," i. e., draw the wrong way during various stages of the burn and thus lengthen the burn.

Where single stacks are used on kilns they generally are built 30 to 45 feet high. Their area of course depends upon the size of the kiln. One rule which has been used with good results is that the area of the stack flue in square inches should equal the area of the kiln floor in square feet. Greaves-Walker has stated that he has achieved best results on the single stack type of kiln where one square foot of cross-sectional chimney area was provided for each eleven square feet of grate area.

Because of the more equal distribution of the draft and the fact that less work is required of them individually, the stacks on a multiple stack kiln need not be as high as for the single stack type. However, the ratio of stack area to grate area is larger. According to Greaves-Walker, in the multiple stack type the proper ratio is one square foot of cross sectional stack area to nine and two-tenths (9.2) square feet of grate area.

Single stacks should always be built with a separate inner lining. This lining need not be more than four inches thick but it should be separated from the outer casing by an air space of two or three inches. Occasional headers should be shoved out of the inner lining so as to just touch the outer shell. In a stack built in this manner the inner lining can move up and down freely from the expansion and contraction and prevent any cracking of the outer shell. When two or more kilns are connected to the same stack a separate inner stack should be built for each kiln.

Instead of carrying the inner stack up the total height of the stack, it is often carried only a few feet above the point where the flues enter. This practice is only completely successful when the inner lining is carried up at least two-thirds of the total height of the stack.

There seems to be a wide difference in opinion as to whether a round or square stack is best. Where single stack kilns are used it seems to be the general rule that the stacks are built square. It is claimed that these are best because square stacks can be braced vertically better than round ones. On the other hand, the round stack has the advantage of having less friction area tending to slow up the flow of gases thru the chimney than does a square stack of equal area.

The two views accompanying this item are of interest to those who build stacks for kilns, since they show in a very clear manner the method followed by the Clearfield (Pa.) Sewer Pipe Co. in erecting scaffolding to build up their stacks.

One Method of Holding Labor

Of the three great present-day sources of worry to the clay products manufacturer—labor, fuel, and car supply—the first-mentioned is probably the most serious Usually it presents itself with greater frequency than either of the other difficulties.

Many different schemes have been tried to keep the men on the plant from leaving to join other companies where more attractive positions were offered or to keep them satisfied with their conditions and wages. Such methods as free housing, cheap board, bonus systems, and the supplying of workmen with foodstuffs at cost, have been tried by any number of firms. On some plants these methods have proved entirely successful and yet on others they have failed. A good deal of the success of any of these plans depends, of course, upon the degree and spirit with which they are taken up.

The supplying of foodstuffs to workmen at cost has proved very successful at several plants. A large machine tool company in Madison, Wis., recently bought a large quantity of rice and sugar and allowed each one of its employes to purchase ten pounds at the price paid for the goods by the company. In talking with one of the employes it was found that the men are very pleased with this opportunity and their appreciation of this service makes them satisfied employes. Several refractory plants in the East have tried similar schemes with good success. One plant has purchased hams for its employes in this manner and another has supplied flour. If the employe does not have the cash ready he is allowed to purchase and the amount it deducted from his next pay check.

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Northwestern Convention Plans Developing

According to all indications the tenth annual convention of the Northwestern Clay Association is going to be a winner in every sense of the word. The officers of this organization seem to have taken a correct reading of the pulse of the industry and chosen for discussion just the character of subjects in which the interest of clay products manufacturers is centered today. Timely and of great interest are the following topics which, according to R. H. Smith, secretary and treasurer, are a few of those which will be presented at the coming convention to be held on January 17 and 18:

"Waste in the Clay Industry," by W. D. Richardson.

"The Organization of the Business of an Industry," by C. B. Platt, Secretary of the Permanent Buildings Society, of Des Moines, Iowa.

"The Coal Situation," by J. F. McGee, State Fuel Administrator for Minnesota.

"The Labor Problem," by D. D. Descohier, superintendent of the Minnesota Commission of Public Safety.

"Requirements of Fire Brick in Furnaces and Kilns," by J. A. Glandon, vice-president of the A. P. Green Fire Brick Co.

"War Loans," by Henry Deutsch, chairman of U. S. War Savings Committee.

"Transportation of Clay Products," by J. R. Ewing, Western Weighing and Inspection Bureau.

This line, however, does not complete the program; there are still other speakers to be arranged for who will also have a message of value to deliver. A banquet to be served on the evening of the 17th will provide pleasant relaxation from the tension of business discussion.

Coal and labor scarce.
Demand for greater production.
Machines trying to do their bit.
Handicapped by breaking Belts.
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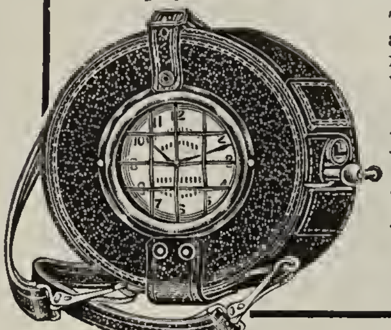

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It will prevent wear on your gears and pinions; if it prevents wear, it eliminates frequent replacements; if gears are replaced less, there will be fewer "plant shutdowns"—and that means steady running and profit. You had better investigate Rino.

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Complete Power Transmission Machinery Equipments
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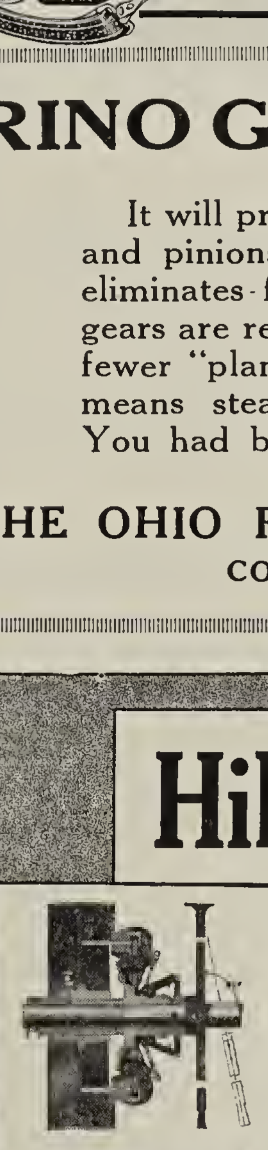

Hill Friction Clutch Pulley
Smith Type
(Patented)

Price Pyrometers on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

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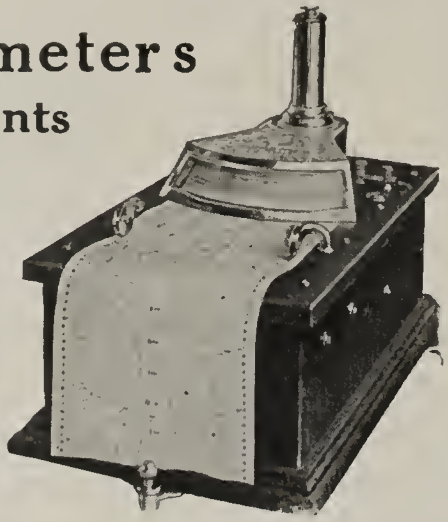
CLEVELAND OHIO



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is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
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They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. **It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."**

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

QUESTIONS

A Three Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Wants Information About Chrome Brick

838. *Pennsylvania—Will you kindly advise me regarding the following:*

1. *Are chrome brick being made in the United States at this time, and if so, at what price are they being sold?*
2. *Where is the raw ore secured?*
3. *Who manufactures them?*
4. *Amount of chrome in the ore?*
5. *Are other brick substituted, and if so, what kind?*
6. *The uses of silica or ganister rock outside the brick industry and the blast furnaces?*

Chrome brick are being made at the present time in the United States and are selling at about $135 a ton, which is equivalent to about $675 a thousand.

The raw ore is secured from New Caledonia, which is an island just east of Australia; some comes from California, and a small quantity is obtained in North Carolina.

The American Refractories Co., the Harbison-Walker Refractories Co., and a few other companies are manufacturing this type of brick.

The amount of chromic oxide in the ore when a good grade of chromite is obtained is sixty-eight per cent. The remainder is iron oxide. However, chrome ore frequently contains magnesium oxide which replaces the ferric oxide, alumina which replaces the chromic oxide, and silica as an impurity. An analysis of North Carolina chromite is as follows:

Chrome oxide	58.00 per cent.
Aluminum oxide	7.00 per cent.
Iron oxide	25.00 per cent.
Magnesium oxide	4.50 per cent.
Silica	3.20 per cent.
Calcium oxide	.90 per cent.

We do not know of any use made of ganister rock outside of the brick and blast furnace industries, unless it is possible that some glass manufacturers use it.

* * *

Changing from Coking Table to Slanting Grates

836. *Kentucky—We are changing the coking tables in one of our kilns to a slanting grate bar and would like to know if you believe the change to be advisable under our conditions.*

The inside diameter of the kiln is 26 feet. It now has two fire boxes to the quarter, or eight to the kiln. What we want to know is, will eight slanting grate bar furnaces provide sufficient grate surface to get satisfactory burns without consuming more time or fuel?

The grate surface will be about 20"x30" in each furnace, slanting at about 45 degrees. About eight inches of clear-

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

ance space will be left between the lower end of the grate and the bottom of the fire boxes, while about eighteen inches of space will separate the grates from the bag wall.

We believe that the plan of fire boxes which you have outlined will prove satisfactory. In connection with this matter, we will give you some kiln furnace data that should help to guide you in the changes which you make.

Lovejoy has stated that one furnace should be built for every 400-600 cubic feet of setting space in the kiln. On the other hand, Harrop is authority for the statement that one furnace should be built for every 450 cubic feet of setting space in the kiln. Common practice reveals the following number of fire boxes for kilns of various diameters:

Diameter of kiln in feet	Number of furnaces to kiln
26	8
28-30	10
32-36	12
38-42	14

The size of the grate in the fire boxes will also depend upon the cubic feet of setting capacity of the kiln. The grate area in square feet generally equals one and one-half per cent. of the cubic feet of setting capacity where the ware is to be burned to cone one (approximately 2,000 deg. Fahr.) and the coal fired is of such a quality that its heat value is equivalent to 13,000 B. t. u. In cases where the ware is matured at a higher temperature than cone one, the above one and one-half per cent. is increased by .05 of one per cent. for each additional cone to which the ware is burned. Where inclined grates are used instead of flat grates substitute eight-tenths of one per cent. for the one and one-half per cent. in the above calculations and proceed as before. In case a coking plate is used figure one-half of the coking plate area as a grate area. Practice at various centers of the clay-working industry has been as follows:

In Germany the grate area in square feet is equal to one per cent. to one and one-half per cent. of the cubical setting capacity for ware burned to cones four (approximately 2,210 deg. Fahr.) or five (approximately 2,245 deg. Fahr.)

For Seattle (Wash.) kilns the grate area is figured at one and four-tenths per cent. of the cubical setting capacity, the coal used having a heat value of 11,000 B. t. u.

In the Hocking Valley district the kilns have on the average a grate area in square feet equal to one and two-tenths per cent. to nine-tenths per cent. of the cubical setting capacity on rectangular kilns. However, Harrop claims that nine-tenths per cent. is too small a figure.

Fire boxes which are too large waste fuel.

It is best practice to build the grate as far in as possible so as to conserve the heat. In some cases it has proven of

ORIGINAL Boss SYSTEM
COMMON SENSE APPLIED TO
Drying and Burning
ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

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Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

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PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

SIL-O-CEL Prevents Heat Penetration

INSULATE the crowns and walls of your kilns with Sil-O-Cel Insulating Brick and Powder.

Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

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Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

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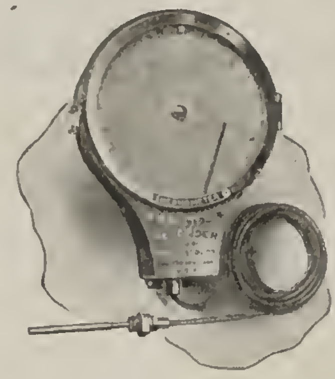
We carry a complete line of high grade chemicals for the clay industry



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RECORDING INSTRUMENTS

Their rugged simplicity, high quality material and protective casing enables them to stand up for years with uniform accuracy under exposure to heat, dust, smoke, chemical fumes and other hard conditions.

They need just ordinary shop care. There are no delicate parts to get out of adjustment. No experience whatever is necessary to keep them going.

Uniform accuracy has been maintained for years without repairs.

Any engineer or intelligent shop man can erect them.

Bristol's Recording Instruments are being used for recording pressure, temperature, electricity, time, electrical motion, etc. Catalog gives full details.

The Bristol Co. Waterbury, Conn.

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The New Sewer Pipe Truck

Differently designed—built better than ordinary—with the same care, the same skill, and of the same excellent materials of which we have long designed and built Toronto Machinery, from Sewer Pipe Presses to Dry Pans and Wheelbarrows.

This Pipe Truck is built in 3 different sizes. No. 1 handles 18", 20" and 24" pipe. No. 2 handles 27", 30" and No. 3 handles 33" to 36" pipe.

A post card request brings to you our descriptive matter.

The Toronto Foundry & Machine Co.
Toronto - - Ohio

It will save from 1 to 3 men according to size of pipe

value to build the fire boxes so that the grate level is slightly below the level of the kiln floor.

The pit kilns on the Purington Paving Brick Co.'s plant are built in this fashion. A description of the fire boxes of the kiln on this plant is given in the August 28 issue and September 11 issues of BRICK AND CLAY RECORD. On all fire brick kilns of the horizontal draft type the grate levels are even with the level of the floor.

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"Hot Floor" Tile Dryer Still Troublesome

826. *Illinois—We have just completed a small drain tile plant and are in sore trouble. For drying our ware we have constructed a "hot floor" of concrete, containing steam heads connected with 4-in. drain tile, laid on 8-in. centers. The floor, which is heated by exhaust steam from the engine, gets so hot that one cannot hold his hand upon it and it is ruining practically all of the ware that is laid upon it.*

We have tried to dry our ware by the following methods: By placing the tile directly upon the floor; by placing sand between the ware and the floor, and by raising palets 4-in., 6 in., 12 in., and 2 ft. above the floor. In every case the ware cracks badly within a hour after it has been set. The machine makes perfect ware, at least up to 8 in., which is the largest size which we have manufactured. The clay occurs in a bed which is 8 feet deep, and which begins at the grass roots. It is very tough and plastic and contains no sand, lime, gravel, or other objectionable matter so far as we can see. It pugs and works nicely thru the machine, making a perfect tile, the columns standing up well and being easy to handle.

We have made about 40,000 pieces since our plant was placed in operation, and of this amount fully ninety per cent. has been ruined in the dryer on account of cracking at the ends. We have placed some pieces off the floor for air drying which have not cracked nearly so badly or quickly as those which have been dried from the floor.

The above question was published in the July 3 issue of *Brick and Clay Record* and a comprehensive reply attributing the cause of the trouble to the clay, tempering and mixing, the machine, the cutter, and the dryer; and in each case going into the details which would give rise to the trouble and the best course to pursue in overcoming it. Special emphasis was laid upon the fact that the clay was to all appearances the seat of the trouble. It was a very fine grained, fatty clay, too dense to allow for proper drying. The water which is added to the clay to make it plastic must be removed again in the process of drying, and indications pointed to the fact that the dense structure of the clay prevented the flow of the water from the interior of the ware from keeping up with the rate of the evaporation from the surface, thus allowing the surface of the ware to dry sooner than the interior. Since clay always shrinks upon drying, the above conditions set up strains in the ware which caused it to crack.

To overcome this difficulty it was suggested that the structure of the clay be opened up by adding a non-plastic material, such as sand, broken brick, ground up culls, or small gravel, if it could be obtained free from lime.

The company which sent in this inquiry evidently is "keeping afloat" and has overcome to a great extent the problem which seemed for a time to threaten its existence, inasmuch as a letter just received shows that the factory wheels are still spinning. However, in overcoming one, the company has encountered another difficult problem in the drying of its ware which it explains in the following letter:

837. *Illinois—Following a certain amount of experimentation with other materials we have found a mixture which dries satisfactorily under severe conditions. As we wrote you in our letter of a few months ago, the upper strata of clay in our deposit was of a very plastic nature and, as we have since discovered, far too plastic to dry successfully under any conditions. By digging to the bottom of our pit, which is nine feet deep, we struck a clay at a depth of about 4½ or 5 feet which was impregnated with sand to such an extent that the mixture of the two gives a most satisfactory working material.*

Now, however, we are "up against it" with another problem of drying which we might explain as follows: We have a floor of concrete in which are laid crossheads of 4-in. pipes connected by 1-in. pipes to 4-in. drain tile laid two inches apart. These tile connect the two iron heads. The floor is heated by exhaust steam from the engine. It is simply impossible to obtain a uniform heat over the entire floor, the dryer getting very hot at the steam receiving end and cooling off toward the steam exhaust end. The building is frame and is entirely covered with rubberoid roofing, giving us a nearly air-tight room. Inside the dryer we have constructed three tiers or drying shelves, such as are usually used in open air drying, and these, together with the floor, give us four courses or tiers upon which to set our ware. We have built at the coldest end of the dryer a ventilator extending about twenty feet above the roof and reaching to within one foot of the dryer floor. At the hot (steam receiving) end we have cut an opening six inches wide running entirely across the dryer. Our purpose was to establish a circulation to carry off moisture.

We have failed, and at present the vapor condenses on walls and roof sheathing, and falls in drops to the floor. The extreme humidity makes it impossible for us to dry our ware in less than three weeks, which makes our dream of operating our plant all winter go glimmering unless we can correct this difficulty.

We had wondered if building or roofing paper nailed to the underside of the rafters and inside of the studding, leaving a 4-in. air space between the paper and outer wall, might not obviate the "sweating" difficulty. However, the 2-ft. x 10-ft. x 20-ft. ventilator, together with the 6-in. x 61-ft. intake at the opposite end of floor, does not seem to give much circulation thruout the whole room. If you can suggest some plan whereby, without too material changes, we can operate our plant during the present winter, you will confer a favor indeed.

Your trouble seemingly lies in poor ventilation. Water vapor, being lighter than air, rises to the roof of your dryer and has no possible opportunity to get out, since your exhaust opening is down at the bottom of the room. To remedy this condition, we would suggest that you build ventilators on the roof of your dryer. One of these ventilators to every ten square feet of roof area would probably be the best spacing.

These little stacks are generally built of wood and have a double wall filled with saw-dust to insulate the inner wall and prevent condensation due to a cold surface. They are usually four or five feet high and allow an opening of about one square foot in area. The tops of these stacks should be covered with a hood built on the plan of a four-sided, regular pyramid. The lower ends of this hood should extend to outside of the outer wall of the stack so that any

Tycos
TEMPERATURE INSTRUMENTS
Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
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Rain Gauges.
Anemometers.
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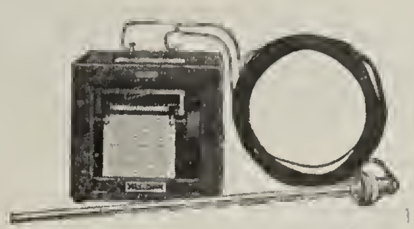
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.



Tycos RECORDING PYROMETER

Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient Tycos aids.

Taylor Instrument Companies
ROCHESTER, N. Y. 67

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand, Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity, Durability and Satisfaction

The Harrington & King Perforating Co.
635 N. Union Ave., Chicago, Ill.
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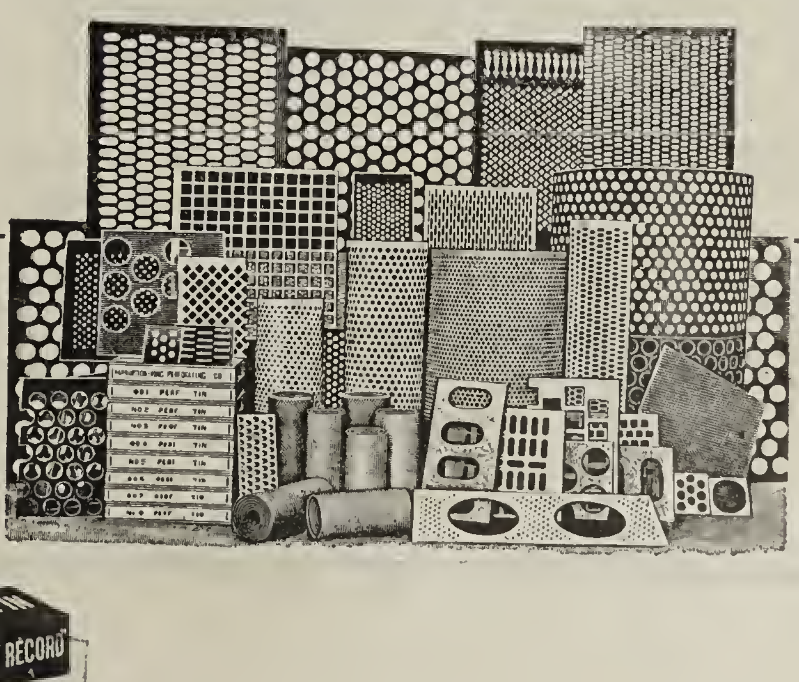
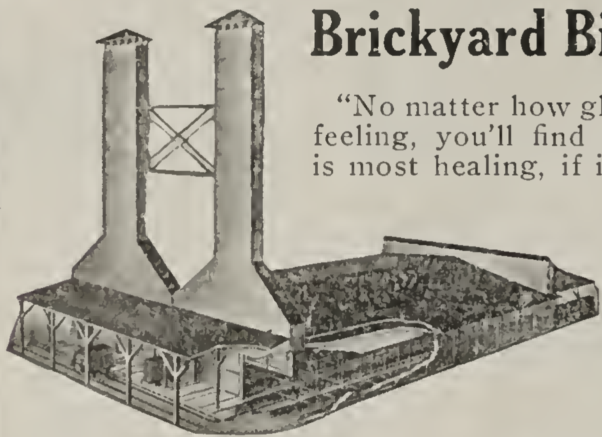




Brickyard Bill Says:

"No matter how gloomy you're feeling, you'll find that a smile is most healing, if it grows in a wreath around the front teeth, thus preventing the face from congealing."

The Standard Drier

makes brick manufacturers smile and keep a-smiling. Because of the way it dries their product through and through, without checking or cracking. Means more and more dollars to meet that old payroll and buy Liberty Bonds with.

Don't matter what the nature of the clay is, either. The Standard Heating Apparatus is designed for flexibility. The piping is in each instance so arranged as to perfectly meet the requirements of the clay and steam conditions.

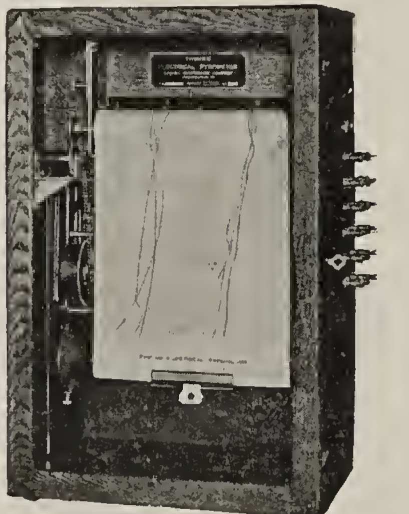
Ask users about The Standard Drier. We'll send you a list of them, with our catalog for the asking. No obligation whatever. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

Stop 'leaving it to George'

Conscription is showing up the fallibility of old-fashioned hit-and-miss methods of heat control.

When the one man who knows—who keeps the records 'in his head'—is called to the flag quality and output are due to suffer. Thwing Pyrometers by permanently recording those conditions which give best results, act as a check and trustworthy guide for future work. They make possible the reproduction of ideal conditions for any desired process regardless of changes of personnel.

Isn't that a good argument for using Thwing Pyrometers in your work? As a war measure as well as a matter of good business, ask us to tell you how they can be applied in your plant.



Catalogue No. 8 is yours on request.

THWING

HIGH RESISTANCE MULTIPLE RECORD

PYROMETERS

THWING INSTRUMENT CO.

3336 Lancaster Ave. Philadelphia, Pa.

condensate that collects on it will not drop back into the dryer, but will run off onto the roof.

We also further suggest that you install a vacuum steam trap at the exhaust end of your steam pipes. This will reduce the back pressure and will undoubtedly give you a more uniformly heated floor.

Your proposed plan of using a roofing paper on the underside of the rafters and inside the studding would probably have some effect upon "sweating." This method of construction would give you an air space which would act as an insulator against the outside temperature and would tend to keep the inner wall surface at the temperature existing within the room. However, it may be unnecessary to adopt this corrective measure after the stacks have been constructed; we believe that they will go far in overcoming your trouble.

* * *

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

John Beardsley of East Moline, Ill., has assumed the position of kiln foreman at the Argillo Tile Co., in Carbon Cliff, Ill.

Charles H. Bryan, vice-president of Mercier, Bryan, Larkins Brick Co., of Detroit, is being kept busy at present as head of one of that city's army draft boards.

Ralph T. Kleymeyer, son of H. C. Kleymeyer, general manager of the Standard Brick Manufacturing Co., of Evansville, Ind., returned home from college at Exeter, N. H., to spend the holiday vacation.

Allen S. Platt, son of C. B. Platt, of Van Meter, Ia., secretary of the Permanent Building Society, has enlisted in the aviation branch of the army and is now in the training school at Ft. Omaha.

Jack Galvin, former manager of the American Brick & Tile Co., Mason City, Ia., has become manager of the Auburn (Ia.) Brick & Tile Co. He succeeds F. W. Straight, who has moved to Colorado.

After twenty-nine years of active service in the ranks of the clay products manufacturers, W. A. Settle, who has conducted a brickmaking plant at Clarksville, Tenn., has decided to retire. Mr. Settle's future plans are at this time unknown.

Harry Dorian, formerly with the Plymouth Clay Products Co., Ft. Dodge, Ia., has cabled his associates there of his safe arrival in France, December 10. Mr. Dorian is with the 104th aerial squadron and has the rank of sergeant.

Arthur Turner, yard foreman for the Fallston Fire Clay Co., whose plant is at Fallston, Pa., with main offices at Pittsburgh, Pa., stopped off a day in Chicago recently. Mr. Turner was on his way to the Pacific Coast to visit his mother, who is ill at the present time.

Maurice B. Greenough, of the National Paving Brick Manufacturing Association, Cleveland, Ohio, read a paper before the Section D, Engineering, of the American Association for the Advancement of Science at Pittsburgh, December 28. His subject was the "Growing Use of Motor Trucks for Highway Transportation."

R. P. Wilson, formerly manager of the Cameron (Pa.) Clay Products Company, has entered the army and holds an officer's commission. His place in the firm will be taken by another party until his return, and in the meantime business will go on as usual with the above company.

Practically every trade and industry was represented at an accident prevention conference held in Baltimore recently, under the auspices of the Merchants' & Manufacturers' Association. J. W. Dow, of the New York Central Railroad, made an address. J. M. Moore represented the Baltimore Retort & Fire Brick Co.

Lewis Kopp, secretary of the Cincinnati (Ohio) Clay Co., Union Trust Building, spent the holidays with his family in Tuscorawa, Ohio. Reports are very fair at the office of this company, the principal difficulty at this time being the question of shipping. Orders for sewer pipe, flue lining, and kindred supplies are very good, but the trouble in getting them moved has been rather serious.

John P. Turpen, manager of the Columbus (Ohio) office of the Thomas Moulding Brick Co., sprang into the limelight recently when, as a newsboy, he sold papers to the amount of approximately $300, the proceeds of the sale being used in relieving needy people. The Newsboys' Organization is an old charity and many of the prominent business men of the city sell papers upon the day specified.

D. W. Weaver, of the Brick Sales Co., Cincinnati, Ohio, recently had the misfortune to lose his automobile by theft. The machine was left standing in front of the St. Paul Building on Fourth Street, where the company has its offices, and tho locked, the thief managed to get away with it. No clew has been found as yet, and it appears doubtful if the car will be found, judging from Cincinnati's record of cars stolen and returned. Mr. Riggs, of this company, says that business at present is very slow.

Leo Krueger of the Cuyahoga Builders' Supply Co., H. E. Kemper, of the R. L. Queisser Co., and James T. Morrisey, of the Cleveland Builders Supply Co., all three managers of the brick departments of their respective companies, came near being the subjects of a 'searching party on their return from the convention of the American Face Brick Association, at French Lick Springs. Just as local members of the trade were engaging a pussyfoot to trail them down, the missing members arrived in Cleveland, after being snowbound for five hours.

Alabama

The Birmingham (Ala.) Clay Products Co., with headquarters in Birmingham, and which has an authorized capital stock of $9,250, has filed papers of incorporation in the probate court. The officers are: William B. White, president; John M. Bradley, vice-president, and J. D. Rucker secretary and treasurer.

California

The Phillips, Connor Co., Sacramento, Cal., makers of Dennison tile is figuring on building several additional kilns.

The Livermore (Cal.) Fire Brick Co. is making some improvements to its plant. These include the erection of a large tank, several large sheds, and some minor work.

The Dove of Peace has settled on all users of

UNION STEEL CHAINS

Their chain battles are things of the past

YOU will obtain *maximum chain economy* TOO when you use Union Steel Chains.

Their High Carbon Links (STRENGTH), Large, Case Hardened, Reversible and Renewable Steel Bearings (DURABILITY), Self-Contained, Rivetless Construction (PERMANENCY), Insure **Trouble-Proof Chain Service, and a Noticeable Saving—In Operation—In Final Cost.**

Union Steel Chains and Union Standard Sprockets are used by the leaders in the brick and clay industry.

THE UNION CHAIN & MFG. CO., SEVILLE, O.

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.

Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

KEYSTONE

**Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards daily and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

No. 5 Drymore Truck

The loaded pallet is picked up from and deposited upon the ground or floor.

No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.

Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—-
FOR LESS

The Drymore System **Galion, O.**

The Stockton (Cal.) Fire and Enamel Brick Co. recently closed a deal for a million brick for the new generator houses which the Pacific Gas and Electric Co. is building.

The plant of the W. R. Coleman Brick Co., of Santa Barbara, Cal., manufactured 3,000,000 brick this year. The demand this fall has been excellent way up to the present time. The plant is now being enlarged.

Final official figures for the mineral output of the state of California for the year 1916 have just been made public. They show that the clay for brick and tile expressed in cubical feet was 206,960,000 with a value of $2,096,570; pottery clay in tons, 134,636, valued at $146,538.

Certain streets in San Francisco are so steep that an ordinary automobile cannot make its way to the top. As a consequence these particular blocks have become the favorite places which the automobile demonstrators seek in order to impress prospective purchasers of their machines. Several of these machines have skidded in their efforts and more or less damage has been done to fences and front porches. The residents in the section of the city where these hills abound have petitioned the city fathers to pave them with vitrified brick in order to prevent accidents of this nature in the future. As an important improvement club has taken up the matter it is likely that some such action will be taken.

One of the discouraging factors which the manufacturers of building brick in California have had to contend with is the fact that the builders—the owner, architect, and often the building contractor—do not seem to realize that the cost of brick has advanced. Consequently when they plan to build a residence, a public or quasi-public building they do not allow enough in their estimation for the cost of brick. Then an effort is made to have the brickmaker shave his prices, and as this can seldom be safely done, the whole project is indefinitely postponed and in many cases abandoned for the present. All the brickmakers complain of this and say that every few days they are called upon for bids with such limits set that they cannot furnish the brick of the kinds specified. With the close of the year this is a time for the taking of stock, both literally and in a metaphorical sense. Very few of the yards are burning brick at this season, but preparations are being made at several plants to increase the output next year. If the transportation situation can be improved, and some other element does not enter to complicate the situation, high hopes are entertained that business will approach a more normal condition in 1918 than in the past year. That is, that the business will settle down to known conditions, where the needs and ability of consumption of the public can be much more closely estimated than has been possible for some time past.

Colorado

Seventy cars of fire clay were taken from mines at Stone City, Col., during the month of November. This is the largest month's production ever had since the mines opened four years ago. It is expected that the December output will be even larger than that of November.

Connecticut

The last chapter in the history of the sand lime brick business at Unionville, Conn., is being written. Judge Gager of the state superior court recently granted a formal foreclosure of a mortgage for $28,989 against the real estate, brick kilns, and machinery in Unionville standing in the name of Herman Raman. Some years ago the Composite

Brick Co. started business in Unionville and purchased machinery on conditional bill of sale. This company went into receivership in 1912 and the machinery company has since been trying thru various means to collect its money. One phase of the case already has been to the supreme court and back again and finally the property was sold by the trustee in bankruptcy of the brick company to Mr. Raman on a bid of $1,000 above the machinery company's mortgage. A valuation of more than $40,000 is set on the property and the first Monday in February next was set as redemption day. It was stated in court, however, that Mr Raman had abandoned the property and that no one would redeem it.

Georgia

The Kentucky-Southern Refractories Co., of which James B. Hammond, of Bolivar, Pa., is president, has acquired a brick plant in West Rome, Ga. Arrangements will be made to enlarge the plant and equip it for the manufacture of refractory brick.

Illinois

The state public utilities commission recently granted Illinois railroads permission to increase all intra-state commodity of rates on tile, clay, and other articles taking brick rates, excluding brick, by five per cent.

Indiana

Brick manufacturers in southern Indiana are vitally interested in good roads. The Dixie Bee Line Highway Association that was organized a year ago has as its object the building of an improved road from Danville, Ill., to Nashville, Tenn. Most of this road has been completed and in Knox County, Ind., fifty miles north of Evansville, a part of the road was constructed of brick. The "market highway" that will run from Evansville to New Albany is to be nearly 200 miles long and it is proposed to build a part of this road with brick. Another highway that has been approved by the Indiana State Highway Commission will be built from French Lick to Evansville and it is hoped that some of this road will also be constructed of brick. The city of Boonville, Ind., recently finished its first brick street and it is expected that more will be built in that city.

Iowa

The Platt Co., Van Meter, Ia., has just completed the installation of a clay storage shed with a capacity of 7,000 tons of clay.

The Kalona (Ia.) Clay Products Co. has filed amended articles of incorporation with the secretary of state, increasing its capital stock to $200,000.

It has been decided that the headquarters of the annual convention of the Iowa Clay Products Association, to be held in Des Moines on January 23 and 24, will be at the Chamberlain Hotel.

H. L. McComb has traded his plant at De Soto, Ia., for land in the Rio Grande Valley of Texas. Unless a purchaser is found soon by the new owners the plant will be dismantled.

The Schakelford Brick Co., of Des Moines, Iowa, suffered a $150,000 loss by fire December 17. The fire started in the drying shed at 4:30 p. m., just as the workmen were leaving the plant for the day, and soon completely destroyed the factory buildings and machinery. The plant will be rebuilt immediately.

Iowa face brick manufacturers held a meeting in Des

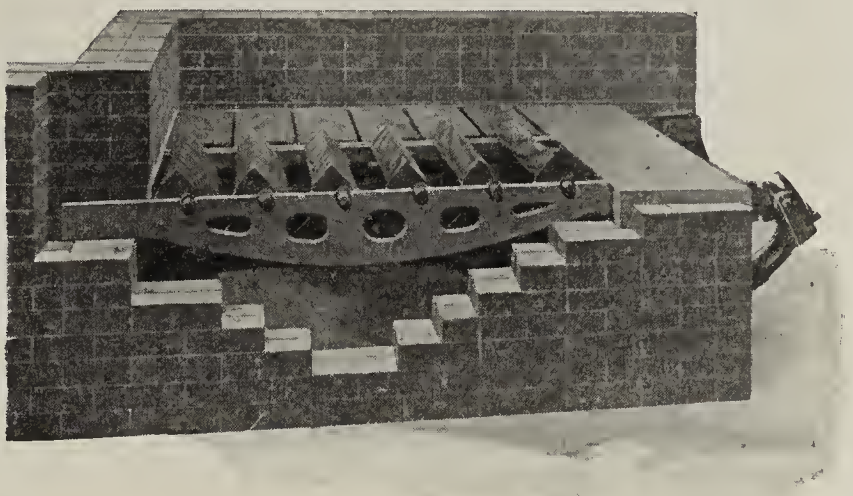
Cyclone Grates

—are actually saving from 10% to 25% of former coal tonnage used.

If you do not investigate—the fault of a continued 10 to 25% loss is on your own shoulders.

We absolutely guarantee 10%, it usually is more. Ask for full explanation and our easy terms.

Cyclone Grate Bar Company
Buffalo, N. Y.



No Grades Too Steep For The Duplex 4-Wheel Drive

Sturdy and dependable, with irresistible reserve power, Duplex 4-Wheel Drive trucks begin their notable haulage tasks where other types of commercial vehicles leave off. Exclusive application of the Duplex 4-Wheel Drive principle makes it possible for Duplex trucks to haul capacity loads under conditions that prevent the operation of any other type of heavy haulage vehicles.

No grades are too steep; no roads too snow-embanked; no sand or mud too deep for the Duplex—the motor truck that is equal to any emergency.

Duplex trucks are built especially for brick and tile manufacturers, contractors and road builders—and are delivering capacity loads at lowest ton-mile costs. Let us send you data showing how profitably the Duplex is solving haulage problems in your line of business. Write for our catalog and the heavy haulers' magazine, "Duplex Doings", issued in the interest of better transportation methods. Address all communications to Dept. 128.

DUPLEX TRUCK COMPANY
LANSING -:- -:- -:- MICHIGAN

Moines on December 21 and formed the Iowa branch of the American Face Brick Association. Officers chosen were W. H. Brecht, of Boone, president; J. L. Buckley, Des Moines, vice-president, and C. C. McCormick, of Des Moines, secretary and treasurer.

Kentucky

H. H. Frazier, sales manager of the R. B. Tyler Co., reports booking the second order for 300,000 common brick from the Kentucky & Indiana Bridge & Terminal Co., which is building a roundhouse in Louisville. The brick are shipped from Huntingburg, Ind.

An Eastern Kentucky employer is making use of an interesting inducement to get full time performances out of his labor—and it works. This employer pays common laborers $2.25 each at the outset and has a standing offer to pay every man who puts in full time a crisp $5 bill at the end of every four weeks as a bonus. Where the employer himself or conditions over which nobody has control make interruptions necessary, the four weeks are computed as twenty-four working days and the bonus paid just the same. This offer, which is comparatively slight when the scarcity of labor is considered, gives the employer the opportunity to choose the best men in his section. It stimulates the men to continuous labor. One day lost out of the twenty-four, for instance, is equivalent to losing three days' pay and a half a dollar thrown in.

Massachusetts

A large order embracing over 3,000,000 brick for the Watertown (Mass.) arsenal was received by the New England Brick Co., of Boston. No other orders of such importance have been reported recently.

The New England Brick Co., of Boston, Mass., has received an order for 1,250,000 brick to be used in the construction of a schoolhouse at Nashua, N. H. This is one of the largest orders placed recently in Boston.

The Piscataqua Navigation Co., which for twenty-seven years has conducted a towing business at Portsmouth, N. H., devoting most of its attention to hauling barge loads of brick made in the yards near Portsmouth to Boston and other markets, has been dissolved and its fleet of tugs and barges taken over by the United States Shipping Board.

The city of Springfield, Mass., is making strenuous efforts to secure the 1919 annual meeting of the National Brick Manufacturers' Association. Charles W. Winslow, secretary of the Springfield Chamber of Commerce, recently attended a meeting of the state association at which he was promised the support of that body in his efforts to bring the national meeting to Springfield. R. A. Bailey of Springfield is vice-president of the state association.

Michigan

The McDonald Coal and Brick Co., of Detroit, has transferred its office from Third and Holden Avenues to Hamilton Avenue and Grand Boulevard.

The F. B. Holmes Brick Co., of Detroit, Mich., has opened a modern office at its yard, York and Third Avenues, and has closed the office formerly maintained in the Penobscot Building. Greater efficiency is expected from the closer connection of yard and office.

The Mercier, Bryan, Larkins Brick Co., Detroit, Mich., has adopted oil as fuel to keep running even two days a week, but, according to Joseph Larkins, the substitution has

The Analogy Between Fire and Water, Scum and Rollin's Barium Carbonate

IS PERFECT

Rollin's Barium Carbonate eliminates and smothers the scum just as effectively as fire is smothered by water.

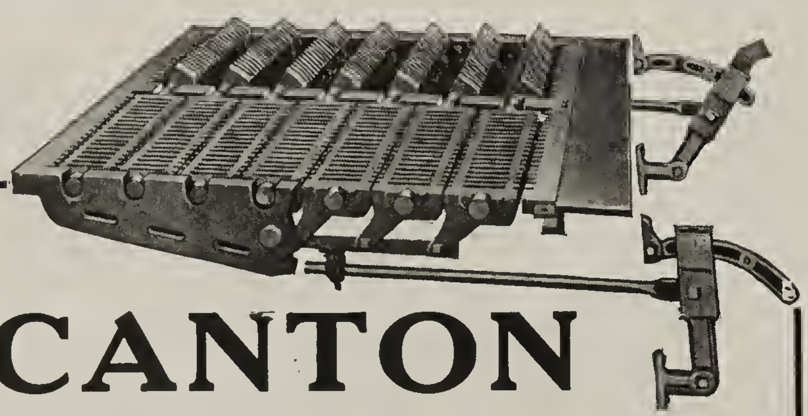
Add "Rollin's" at the pug mill feeder; it renders insoluble and harmless the scum-producing sulphates that are in your clay.

If you are bothered with scum on your ware, either in the drying or burning process, or after it is layed up in the wall—you particularly should use

Rollin's Barium Carbonate

Rollin Chemical Company
Inc.
Charleston, West Virginia

General Sales Agents
National Aniline & Chemical Company
244 Madison Ave., New York City



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave., CANTON, OHIO

Southern Representative: McBurney & Jones,
Efficency Engineers, 829 Trust Co. of Ga.
Bldg., Atlanta, Ga.

not been found practicable from a financial viewpoint. Even at the present price of coal, it costs this plant about $150 more a day to burn with oil than with coal, Mr. Larkin states.

Detroit brick manufacturers are suffering from the unprecedented coal shortage, some of the plants running only one and a half to two days a week, while others have shut down altogether. While the manufacturers have a considerable amount of stock on hand, most of them who have closed down assert that they would have kept going if coal had been available.

Montana

The Fromberg (Mont.) Brick Co.'s plant has started to make brick for its fourteenth kiln which is one more kiln than they have ever burned before in one season. The late spring retarded the work somewhat at first, but the loss due to this was more than made up by the prosperous fall season

Nevada

Ely, Nev., is to have a brick manufacturing plant in its suburbs next spring. J. J. McDonough, O. M. Wallace, and Joe Dugan, who own extensive clay beds nearby, are backing the new plant and declare that it will be in operation as soon as they can get the necessary machinery.

New Jersey

The plant and property of the Cliffwood (N. J.) Brick Co., Perth Amboy, has been taken over by Herman Ellis.

The plant and property of the Berkeley Brick Co., Berkeley Heights, N. J., has been acquired by the Block Chemical Works, Newark, at a consideration said to be $25,000.

Ohio

The management of the Hallwood Brick & Tile Co., of Columbus, Ohio, has been changed recently and F. E. Shaffmaster, formerly of Toledo, has been made general manager. He succeeds H. S. Hallwood, who has been acting in that capacity. The plant is located on Seventeenth Avenue, Columbus, and is modern in every respect. It manufactures common brick and hollow tile.

The face brick trade in Ohio has been effectually throttled by lack of transportation facilities. Because of federal restrictions, few cars are now supplied face brick factories and as a result many plants in Ohio have been closed down temporarily. Others are getting a car now and then and are not able to keep up their shipments. Buildings in process of construction are being held up and the trade is in a generally unsettled condition. Managers of face brick concerns are looking forward to better conditions in the spring.

Industrial companies that complain of the serious shortage of labor at the present time will have cause to complain even louder in the spring, believes O. W. Renkert, vice-president and general manager of the Metropolitan Paving Brick Co., of Canton, Ohio. With thousands of men already in the army and the possibility that spring will see the draft of another army and the industrial mobilization of men of military age the shortage will become more acute. In addition to this there will be the usual boom in building trades and other lines of work when workmen will take advantage of outside employment.

Stockholders of the American Sewer Pipe Co., of Akron, Ohio, have benefited by the division of net profits of the

Erie Revolving Shovels

"Even if we were able to get a gang of laborers to do this digging by hand it would ruin us to try it.

"We are taking shale out from under the old bed—a level that it did not pay to work by hand methods, even at old-time labor prices. We have got 15 years' digging left in this lower level. We are making forty thousand brick a day, steady output.

"The shovel is taking it out much cheaper than our hand labor cost us on the upper bed.

"My son is running the machine, and he has operated every make of shovel that is used in brickyards. He is the strongest Erie shovel booster you ever saw; he says that the Erie is far and away the fastest machine for brickyard digging, and the most reliable and the easiest to keep up. Over there we hit a big outcrop of flint rock, which is the hardest digging that you can put a shovel in. The Erie went through it without blasting. It was the hardest digging I have ever seen a small shovel get away with."—J. M. Highhouse, Superintendent of the Dunn Brick Company's plant near Erie.

Every owner of an Erie shovel is ready to tell you this same enthusiastic story. They will tell you that the Erie is not only a faster machine, but more RELIABLE. It is the TROUBLE-PROOF shovel, because it has more strength than other shovels of its size, at every point of wear and strain.

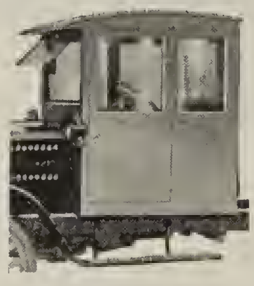
And the Erie's long reach saves move-ups, saves shifting of track, saves spotting of cars—in other words, SAVES MONEY.

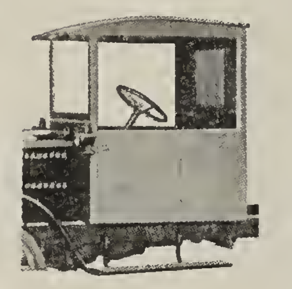
Prove these facts for yourself. Find out which is the best revolving shovel on the market.

We would like to send you a copy of our new Bulletin "B."

Ball Engine Co., Erie, Pa.

Insures Complete Winter Protection to Your Truck Drivers


Closed for Winter


Open for Summer

No longer are motor truck owners in the brick and clay industry handicapping their drivers by purchasing trucks without the ALL-YEAR Cab. It solves the truck owner's problem of maintaining winter haulage and delivery schedules. It discourages speeding, diminishes possibilities of accidents and excessive wear and tear, and insures competent handling and care of trucks by attracting high class operators.

The ALL-YEAR Cab in winter is entirely closed and is wind- rain- and cold-proof. In summer it is quickly changed to an open, cool housing by removing the winter attachments.

KISSEL TRUCKS

Five New Sizes—A Truck For Every Business—A Size For Every Purpose

Ten years of practical truck building experience are back of the new line of Kissel Trucks. The Kissel combination of perfected worm drive rear axle, sturdy Kissel-built power plant, reliable axles and dependable brakes, insures uninterrupted performance.

Investigate Kissel Trucks and the ALL-YEAR Cab. Send for specifications and literature.

KISSEL MOTOR CAR CO.
HARTFORD, WIS., U. S. A.

company during the past year to the extent of $255,984.61. Dividends have been disbursed quarterly and officials of the company expect to continue paying dividends unless some unforeseen circumstances arise that will prevent doing so. President George R. Hill, in commenting upon the volume of business, said that the volume was satisfactory altho the company had been handicapped to some extent by the shortage of coal for the full operation of the plants and also by the inability to secure enough cars to ship the products.

The paving brick season in Ohio is now closed, partially because of lack of shipments and partly because of extreme cold weather. On the whole the paving brick season was a good one, as conditions were fairly active, despite governmental interference with the car supply. Several large jobs will be held up until next season. Plans are being prepared and financing is being done for quite a few street and road paving jobs next year. Whether they can be carried out is a matter of conjecture. It is presumed, however, that the ban on paving brick shipments may be raised and the railroads will be permitted to furnish cars for that purpose.

The Excelsior Fire Clay Co., one of the large manufacturing concerns of Lisbon, Ohio, has been reincorporated with a capital stock of $30,000. F. R. Shunk and J. R. Sprankle, of Cleveland, who are interested in the Saratoga Fire Clay Co., of Lisbon, are president and vice-president of the company; Fred G. Davis, of Lisbon, is treasurer, and Walter L. Ogden, of Lisbon, former sole owner of the plant, is secretary and general manager. The company has been engaged in the manufacture of chimney tops and flue linings and other fire clay products, and it will enlarge the plant and engage in the manufacture of other products

Pennsylvania

The J. L. Grogan Co., Philadelphia, Pa., has leased property at Fleetwood, and has sunk a seventy-five-foot shaft thru solid clay. The company is making rapid progress in the installation of machinery for the manufacture of pottery, brick, and other clay products.

The large plant of the Clearfield (Pa.) Clay Working Co. has been sold to men who are the principal owners of the Bickford Fire Brick Co., with plants in Curwensville and Lumber City, Pa. It is said that the purchase price was $200,000. A. P. Perley, C. E. Peasley, H. T. Janney and James B. Graham, Williamsport capitalists, are now owners of the greater portion of stock. The output of the plant will be changed from paving brick to fire brick.

Tennessee

The Tennessee Valley Iron and Railroad Co., which is composed of large Pennsylvania interests, has plans prepared to build a brick manufacturing plant at Collinwood, Tenn., which will have a capacity of 40,000 brick daily. The improvement will cover a five-acre site and will cost upwards of $20,000. Robert Dyas, of Nashville, Tenn., is in charge of the plant construction and will be superintendent after completion. The initial production of this brick plant will be used in building structures for iron and furnace buildings. The Pennsylvania office of this company is at 1305 Arrot Building, Pittsburgh, and is in charge of Thomas S. Baillie, who is vice-president of the company.

Texas

The new $20,000 tile plant of the Acme Press Brick Co., of Denton, Tex., will probably be completed and in operation by Jan. 1. The work on this plant has been considerably delayed owing to the fact that materials have been hard to get. A. B. Kelly is the manager of this concern.

Virginia

The C. F. Sauer Co., of Richmond, Va., is making repairs on its brick plant at Meadown and Broad streets.

West Virginia

The Huntington (W. Va.) Clay Products Co., is rushing to completion its new local plant, which will have a daily capacity of 50,000 brick for initial operations. The new works are estimated to cost about $125,000.

In the formation of the new $500,000 Liberty Transit Co., at Wheeling, W. Va., December 28, Samuel B. Goucher, of Toronto O., the well known brick and sewer pipe manufacturer and salesman was named one of the vice-presidents. He was also elected a member of the executive committee, and a member of the Board of Directors. The object of this company is to operate a line of freight boats in the Ohio River between Pittsburgh, Pa., and Parkersburg, W. Va., and Cincinnati, O., which will afford great relief to the freight congestion in the Ohio Valley. Since the entrance of the United States into the war the advantages that would be gained by using the inland waters has been well realized. Already, crude clay products are being shipped from the New Cumberland district to the Pittsburgh mills by water. Others elected as officials in this company and identified with the ceramic industry are W. E. Wells, of the Homer Laughlin China Co., Newell, W. Va.; Charles A. Smith, of the Taylor, Smith & Taylor Pottery Co., Chester, W. Va.; S. G. Gailard. of the Mack Manufacturing Co., of New Cumberland and Wheeling, W. Va., and George M. Meyers, of the Meyers Sewer Pipe Co., Empire, Ohio.

Canada

The Whitemouth Brick Co., Winnipeg, has been registered. The capital is $5,000.

The Walkerville (Ont.) Brick Co. has been incorporated with a capital of $40,000.

Clement Riggs, Ltd., brick manufacturers at Kelowna, B. C., have sold out to Ward & Baldock.

The Pressed Brick Co., of Redcliff, Alberta, has placed its plant in operation and now has about twenty men at work.

Thompson Brothers, Ltd., Windsor, Ont., has been incorporated with a capital of $60,000 to manufacture and deal in brick and other clay products.

Richard Tope, brick manufacturer of Hamilton, Ont., died recently at the age of 55. He is a native of Devonshire. England, and came to Hamilton 39 years ago.

Hubert DesJardins, formerly managing director of the Montreal Terra Cotta Co., Ltd., Montreal, is not now connected with the business. His brother succeeds him as manager.

The Dominion Brick & Clay Products Co., Ltd., Moose Jaw, Sask., has registered. The capital of this company is half a million dollars. Its factory is located at Claybank, near Moose Jaw. H. G. Love is manager.

The New York Meeting

to talk over plans for a national organization of building interests, mentioned on page 1112 of the December 18 issue, has apparently not been called, as no information is available.

Watch for Further Announcements

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.20
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
610 Federal Street, Chicago, Ill.

WAR POLICY *of* HIGHWAY CONSTRUCTION *and* MAINTENANCE NEEDED

(*Continued from Page* 43.)

Emphasizing the war-time stress being placed on all transportation facilities in the United States, and pointing to the necessity for selective highway construction as a means of relief, Director Page urged the adoption of a definite policy in good road matters with a view to eliminating from next year's construction the non-essential roads and obtaining effective guarantees for the construction of those that are essential. Need for efficiency thru co-operation of all persons directly instrumental in road construction is the keynote of the letter.

Calling attention to the fact that road construction thruout the United States has been seriously hampered by reason of excessive costs, scarcity of labor and inadequate transportation facilities, Director Page declares: "This situation would be serious even in normal times, but in this crisis, when the public roads must, in addition to their normal traffic, be depended upon to relieve the tremendous strain to which the railroads are subjected, it becomes a matter of vital importance that some means be found at least to deal with next season's work so as to insure better results than are possible under our present system."

The policy proposed by Director Page, and on which he requests expression of opinion, is outlined as follows:

1. Selective consideration of all next year's construction in all of the states and the preparation of a program of road work thruout the nation, in which each construction job would be listed in the order of its economic importance to the particular territory in which it is situated and to the nation as a whole. This arrangement, he points out, would permit of the postponement of undertakings relatively less urgent.

2. Co-ordination of this selective process with the railroad and water transportation facilities with a view to insuring an adequate number of cars and vessels of suitable type, with proper distribution, to transport materials for the construction of approved roads.

3. Co-ordination with the materials industries with a view to insuring supplies of materials in adequate amount and distribution and delivery to permit the construction program to be carried out.

Hammering upon the fact the highway is eminently suited for short hauls, from 60 to 80 miles, relief from which would unencumber the railroads to a great extent, the "Engineering News-Record" suggests that the chambers of commerce, boards of trade, and other industrial bodies could play an important part if lined up in the campaign to get the country started on a war program of highway construction and maintenance. According to this paper, chambers of commerce, boards of trade and local associations of manufacturers thruout the country can be of material help in relieving transportation congestion by furnishing to the highway departments of their respective states data as to the highways which can be most useful as substitutes for congested railway routes. This can be done by calling meetings of the traffic managers of the industries, and having them, thru a committee, determine the public roads whose maintenance and improvement is most important.

Such a procedure would be in conformity with plans formulated by the American Association of State Highway Officials at a meeting in Richmond, December 4, and now endorsed in effect by the Office of Public Roads. The plan provides for the preparation of a program for the improvement and maintenance, in the order of their importance, of the highways which are of greatest economic value in the present crisis. Should shortage of materials and labor require priority ruling on all highway work, the program would then be presented to the authorities at Washington as a basis for national approval and authorization of work on the essential routes. Should no priority ruling interfere the plan would nevertheless insure to the committee the expenditure of funds where it will be of the greatest benefit to the industries and people of the state.

* * *

HOW *to* REPORT NET INCOMES

(Continued from Page 54.)

Every partnership having a net income in excess of $6,000 annually must file a correct return of its business for the taxable year; and all partnerships must, when so requested, render a correct return of the partnership business, whether the net income is or is not in excess of $6,000 per annum

The excess profits tax applies to a partnership in the same manner as explained for corporations, and is ascertained in the same manner by the same method as shown in Schedule A, with the one exception that corporations are entitled to add only $3,000 to the deduction, while partnerships are allowed to add $6,000 for this purpose.

INDIVIDUAL ENGAGED IN BUSINESS

Assuming an individual to be engaged in business with an invested capital of $100,000, and an annual net income of $50,000.

The excess profits tax would be computed in the same manner as shown by Schedule A. In this instance the tax on excess profits would be $16,800. The income tax will then be ascertained as shown below.

Net income of individual	$50,000
Deduct excess profits tax	16,800
Net income subject to income tax	$33,200

Income Tax on $33,200

$29,200 at 2 per cent	$ 584.00
31,200 at 2 per cent	624.00
2,500 at 1 per cent	25.00
2,500 at 2 per cent	50.00
2,500 at 3 per cent	75.00
2,500 at 4 per cent	100.00
5,000 at 5 per cent	250.00
13,200 at 8 per cent	1,056.00
Total income tax	$ 2,764.00
Excess profits tax	16,800.00
Total taxes	$19,564.00

The law of 1916 imposes a tax of 2 per cent. on the individual's income, with a deduction of $4,000 allowed, which

"Ordered Today — Shipped Today! — that's what we call SERVICE," says 'On-the-Job' GANDY.

GETTING *GANDY* Belts where-you-want-'em-when-you-want-'em is just as much a part of *GANDY* business as the making of its famous *original stitched cotton duck product.*

The same day your order comes, *that* day it is filled from the big ready-for-shipment stock of well seasoned *GANDY* power and conveyor belts.

Regular and odd size *GANDY* Belts may be obtained from the principal jobbing points throughout the country as well as from the home plant.

If in doubt as to width or ply required, our Engineering Department stands ready to advise you.

Caution—Get your belting orders in at once. Uncle Sam has first call on the railroads, and shipments are likely to be delayed in spite of our quick order-filling service.

To facilitate ordering—write for Stock and Odd Size List.

The Gandy Belting Company
732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

The "B-G" Portable Belt Conveyor
Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

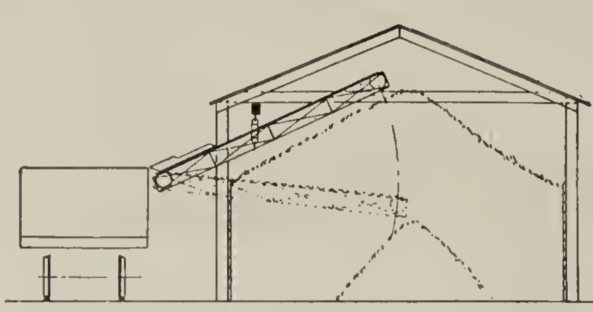
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited. Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

leaves $29,200, the first item. The law of 1917 imposes an additional tax of 2 per cent., with a deduction of $2,000 allowed, which leaves $31,200, the second item. The six remaining items are computed according to the super tax of 1917. The super tax is as follows:

Tax of 1 per cent. on income over $ 5,000 up to $ 7,500
Tax of 2 per cent. on income over 7,500 up to 10,000
Tax of 3 per cent. on income over 10,000 up to 12,500
Tax of 4 per cent. on income over 12,500 up to 15,000
Tax of 5 per cent. on income over 15,000 up to 20,000
Tax of 8 per cent. on income over 20,000 up to 40,000
(For larger incomes refer to War Revenue Act)

* * *

Potters Supply Cantonments Orders

More than twenty ceramic products plants contributed to the work of equipping the sixteen National Army cantonments, according to a report received from the R. T. Crane Co., of Chicago, which had the contract for furnishing all the sanitary equipment for these cantonments.

In the list of companies from which it had obtained the materials to complete this contract, we find the following pottery and sanitary ware companies:

Alliance Pottery Co., Chicago.
American Sanitary Works, Trenton, N. J.
Bowers Pottery Co., Mannington, W. Va.
Camden Pottery Co., Camden, N. J.
The Elite Pottery Co., Trenton, N. J.
New Jersey China Pottery Co., Trenton, N. J
Kokomo Sanitary Mfg. Co., Kokomo, Ind.
Keystone Pottery Co., Trenton, N. J.
Resolute Pottery Co., Trenton, N. J.
Sanitary Earthenware Specialty Co., Trenton, N. J.
Sanitary Earthenware Co., Trenton, N. J.
W. B. Scaife & Son Co., Oakmont, Pa.
Trenton Potteries Co., Trenton, N. J.
Universal Sanitary Mfg. Co., New Castle, Pa.
Wheeling Sanitary Mfg. Co., Wheeling, W. Va.
Jackson Potteries Co., Ford City, Pa.
Lambertville Pottery Co., Lambertville, N. J.
Thos. Maddocks' Sons Co., Trenton, N. J.
Pacific Porcelain Co., San Francisco, Cal.
Standard Sanitary Pottery Co., Elizabeth, N. J.
Wooster Sanitary Mfg. Co., Fredericksburg, Ohio.
The Florentine Pottery Co., Chillicothe, Ohio.
Acme Sanitary Pottery Co., Trenton, N. J.

* * *

Louisville Brickmakers in Dual Role

During the recent period of very cold weather in Louisville, Ky., a common sight on the snow covered streets was the trucks and the teams of Louisville brick manufacturing and retailing companies laden with coal. In some cases the truck and team owners rented them with their drivers to the retail coal men, who were overwhelmed with orders and who had small opportunity of getting them out without calling on everybody else who had teams and trucks to help them. The numerous vehicles bearing the names of the brick and building supply men laden with coal also called attention to the fact that several of the Louisville concerns are in the dual role—in the summer they are brick and building supply men principally; in the winter they are chiefly coal men. The Hillenbrand Brick Manufacturing Co. is also a "coal man." The Banner Coal Co. is a member of the family circle of the R. B. Tyler Co. and the Louisville Sewer Pipe Co. is the sewer pipe branch of the Frankel Coal Co. The combination is a satisfactory one in all cases.

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

Continuous Pottery Kiln on Trial

Considerable interest is being evidenced by all general ware pottery manufacturers in the erection of a continuous kiln at the plant of the Limoges China Co., at Sebring, Ohio, as it is contended that if the success of this kiln is proved, it will tend to revolutionize the industry. It will mean the elimination of two sets of workers—kilnmen and kiln drawers—just as the new stove rooms in the clay shops have done away with the boy question. That more mechanical devices are wanted in the potteries is admitted by all in close touch with the pottery situation. The recent strike in the pottery industry brought this fact very forcibly to the front.

Notes About Potteries Here an There

The Pacific China Manufacturing Co., of Berkeley, Cal., is not prepared to go ahead with its plans as originally outlined to the Commissioner of Corporation and pending the submission of its readjusted plans the commissioner has withdrawn his permission for the company to issue any securities whatever. In California the so-called Blue Sky law is very strict and before a corporation can issue stock or other evidences of indebtedness it must file with the Commissioner of Corporations a complete plan of operation which must be strictly adhered to. It is likely that when the company adjusts its plan to what it finds necessary for a working basis that a new permit will be forthcoming which will give it legal standing.

K. P. Snyder, of the Louisville (Ky.) Pottery Co., has a crow to pick with the Chesapeake & Ohio Railway, which sequestered and burned up a carload of high grade coal enroute to the plant of the company in Louisville. Except for confiscation by the railroals, the coal supply of the company is and has been satisfactory. Only the high grade soft coals of the eastern part of the state are sufficient to answer the purpose of the Louisville Pottery Co., which has found it impossible to work with the lower grade coals of the western part of the state. The company, as a manufacturer of food containers, under the ruling of the government, is entitled to preferential treatment in the matter of coal.

It would be fortunate for the pottery manufacturers located in any part of the Ohio Valley if regular lines of boats were operated between Pittsburgh and Cincinnati, Ohio. This would go a long way toward relieving the freight congestion, especially to the southern and western markets, as ware could be shipped to St. Louis and then diverted to destination. At the moment there are no packets operating between these two points that could be used by the pottery and other Ohio Valley ceramic industries. It would also be possible to have much southern raw clays shipped to the pottery districts by boat, and weeks of delay would be eliminated.

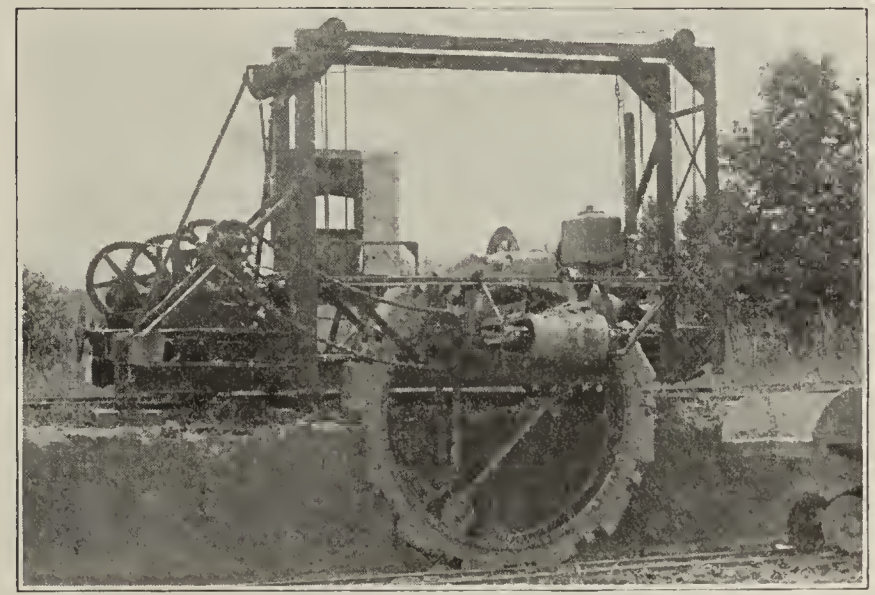
Thru a deal completed at East Liverpool, Ohio, the former plant of the General Porcelain Co. has been taken over on a long term lease by the Bisque Novelty Co., which concern has been operating for the last six months on a limited scale in the former plant of the G. F. Brunt Porcelain Co. As soon as alterations are made, the company will start work in its enlarged quarters, and will likely employ several hundred people, manufacturing bisque doll heads.

TOP

The Buckeye
Clay Digger

will dig anywhere and will deliver the clay up on top of the pit or down in the bottom—depending upon which condition is best at your plant. Its flexibility, the perfect mixture it gives, its cheapness, its low **man power** cost, make it remarkably valuable—now.

The Buckeye Traction
Ditcher Company
Findlay Ohio



or BOTTOM

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

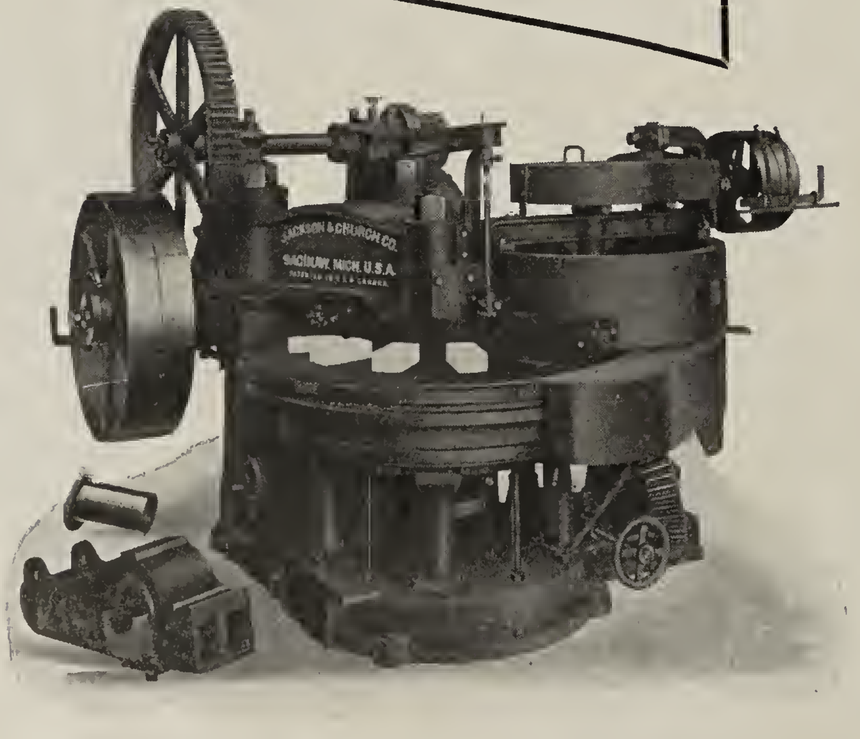
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

The chairman of the St. Austall China Clay Works has announced an agreement with other china clay producing companies representing about ninety-eight per cent. of the production in this industry, by which it is expected to insure the regular distribution of the output of the clay according to the capacity of each company and the quality of its product. A price advance of 33⅓ per cent. will go into effect January 1, 1918. Present quotations for china clay range from $3.15 to $7.30 per longton, f. o. b. Cornwall, England.

The Virginia Potteries Co. has sold its plant at New Lexington, Ohio, and its site for a new plant east of Guyandotte, a suburb of Huntington, W. Va., to J. B. Owens, of Metuchen, N. Y. The purchaser will at once enlarge the New Lexington plant to the extent of $20,000 and also erect a new plant upon the site acquired at Guyandotte. The first unit of the new plant will be building 160 by 500 feet

On account of the congested condition of the railroads operating out of the Eastern Ohio pottery districts, considerable finished ware is now being shipped by express. Thousands of casks and other packages of finished dinner-ware are awaiting shipment out of East Liverpool, Ohio, alone. These casks are being held in the warehouses awaiting movement to freight stations the moment any of the numerous embargoes are lifted.

Shortage of both skilled and unskilled labor in all potteries continues. The "short" list now includes kilnmen, kiln drawers, jiggermen for various size jiggers, casters, saggershop workers, turners, and men for the slip houses. Several hundred men from the eastern Ohio pottery district are now either in the army or navy, and the forthcoming draft will pull a lot more away from the industry.

The Bedford Pottery Co., of Bedford, Ohio, has awarded the contract for the erection of a six-kiln pottery. The main portion of the plant will be a one-story building of brick and steel construction. The estimated cost of the building and kilns is $150,000.

Pressers employed in the sanitary pottery plant of the Great Western Pottery Co., at Tiffin, Ohio, are said to be working about half time because of the inactivity in the sanitary branch of the trade. Officials of the company have been unable to predict the future.

The American Cameo Co., New York, has filed articles of incorporation with a capital of $100,000, to manufacture pottery, china, and porcelain cameos. J. E. McIntyre, L. O. Bergh and J. G. Turnbull, 708 Ocean Avenue, Brooklyn, are the incorporators.

Girls are now being employed in the potteries at Carrollton, Ohio, in the place of boys in "balling" cups and working after the turners. The experiment with this class of help is pronounced a success.

The plant of the Paducah (Ky.) Pottery Co., which was recently damaged by fire, has been rehabilitated and is producing pottery products on a big scale in anticipation of a large holiday demand.

Elry Sparks, son of C. Sparks of the McKenzie (Tenn.) Pottery Co., and himself identified with that company, is now a member of Company F, 117 Infantry, Camp Sevier, Greenville, S. C.

The Maryland Porcelain Corporation, North East, Cecil County, Md., has just been incorporated, to deal in ceramics, porcelain, glass, china, etc. The capital stock is placed at $50,000.

John W. Harl, a well known potter, 44 years of age, died at his home in Evansville, Ind., on December 5, after a short illness.

SPLITS

Planning Shipments Ahead to Avoid Shortage of Supply

(*Continued from Page 52.*)

wonder why them there guys run their car over several miles of smear road full of ruts and holes, and then when they come to a stretch where they can get a run for their money, they all get out and foot it. Every other gang pulls the throttle wide open when they strike the brick." And muttering to himself the conservator of the food supply turned back to his crops.

Meantime the trio started walking slowly along the road. The brick appeared to be spotted here and there as tho scales or chips had snapped out of the surface. Some were as large as dimes, others the size of quarters.

Pointing them out as they went along, Baldwin explained, "Now you see what was reported to us. Some folks fear the brick are going to pieces, but really the trouble is not serious and only a careful observer would notice it. But what can be the cause of it?"

"Traction engine," said the G. M. promptly.

"I don't think so," responded Baldwin. "Why are they so nearly circular?"

LIME INDICTED

"Lime," said Sellers, with conviction. "You know how plaster breaks when a speck of lime gets into the mortar? These are just like such eruptions in the wall of a newly plastered house. Mr. Baldwin will know all about it when he builds his home on that plantation where he is painting his evergreen fence in the grey dawn."

"Don't you think it," declared Baldwin, waving his arms like a windmill for emphasis. "If these brick contain that much lime, I'll use the clay to fertilize my garden."

"It ought to help it," acknowledged Sellers. "You would have to fertilize that ground to make brick!"

"I'm sure I couldn't rise an umbrella on mine," confessed the G. M., tapping the spots with his umbrella as he walked along. "What's more, my garden is so small I have to use folding beds. I wonder if the trouble may not be purely mechanical? At any rate, we have found out about all we can here. Let's go to the factory and see if we can find anything there to throw any light on subject."

Retracing their steps, they entered the auto and started back over the improved ruin, staggering over it like ship making an erratic course thru the danger zone.

"A man smashed his car on this road last year," said Sellers, in disconnected sentences. "He sued the township. Defense showed he was intoxicated at the time. His attorney claimed a drunken man needed a good brick road as much as a sober man did, and a whole lot more. So he won out."

"Man at the plant in my time—defended his sprees," said the G. M. in broken sentences. "Said when on a tear—always saw twice as many of his friends—as he did when sober. One thing sure—he couldn't see twice as many holes—as we're hi-hitting now."

In Every New Machine You Buy This Season, Put This in the Specifications:

Cork-Insert Pulleys

"Must Be Used"

Because they will help you to get maximum efficiency out of your machines.

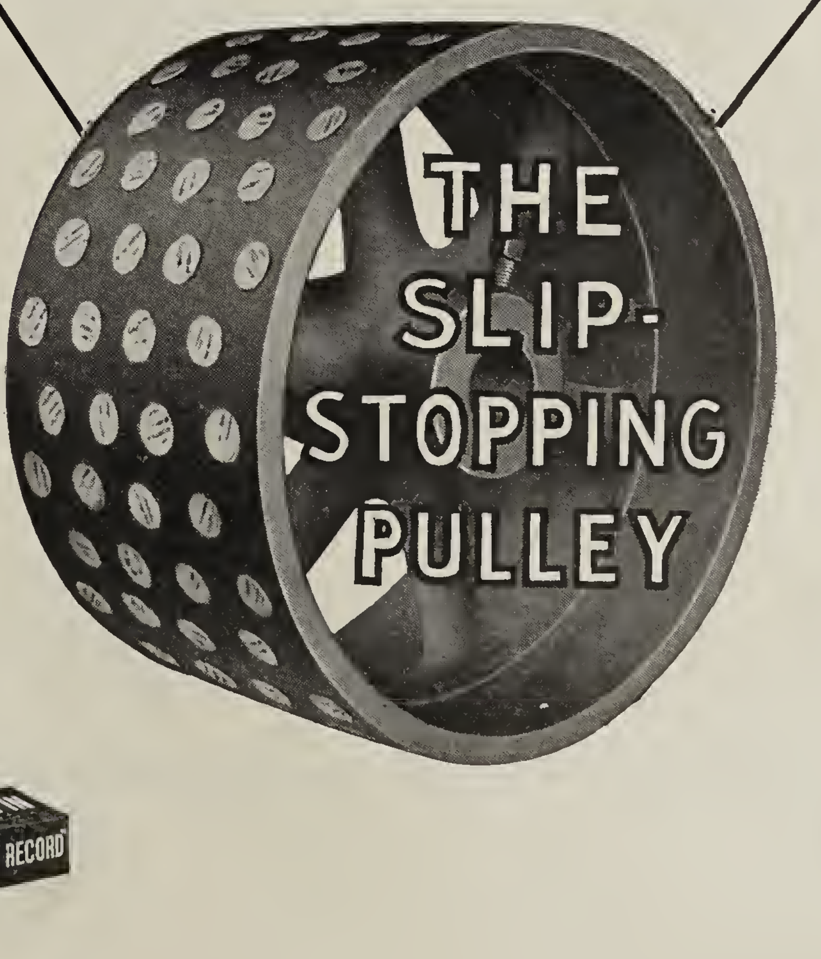
Because they will cut down your cost of fuel.
Because they will reduce your belt expense.

Because they make your machines last longer and reduce repair expense to a minimum.

Cork Insert Pulleys are simple in themselves—yet their very nature gives positive certainty of full power,—the belts cannot possibly slip—they give uniformly good service regardless of atmospheric conditions or the prevalence of dust.

Any machine can be equipped with Cork Insert Pulleys—let us send you further details.

The Cork Insert Company
168 Federal Street
Boston Massachusetts



Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

Flower Pots

A side line of flower pots has come to many common clay manufacturers as a new idea, which upon adoption has uniformly proved profitable.

A flower pot is a commodity that is sold to everybody—everywhere, and the demand is consistently enormous. We all like flowers; in fact, it is a universal trait that is common to the rich and the poor of every known nation.

Consequently, a market is in existence in your own community that is practically yours for the taking. Sales are made in bulk to the greenhouses, the hardware stores, department stores and similar shops.

When manufactured as a side line in a brick or hollow ware plant or in potteries, the machine is usually set up in an unused corner of the plant near a line or countershaft.

The men are employed in making pots during delays or shut downs, when otherwise they would be idle. Another method is to use the labor of the men that must be employed for fill-in work and odd jobs.

It is rare that the men do not quickly take an active interest and soon become proficient in moulding, handling and drying the pots. The preparation of the clay is also interesting, but involves no skill that cannot be mastered quickly.

After the pots are dried, they may be set "whole kiln" or a portion of the kiln burning hollow ware brick delegated to them. It is not necessary to burn them hard, as they are usually desired porous.

The Baird Machine and Manufacturing Company, of 54 Jefferson Avenue, Detroit, Michigan, will furnish more information upon request.

* * *

"Federal Expansion Requires Additional Buildings"

Keeping pace with its steadily expanding business, the Federal Motor Truck Company has just let a contract for the construction of an addition to its plant capacity which will greatly increase the present floor space. The new building will be of brick and steel construction and will be rushed in order to be in use in time to meet the present heavy requirements. With the completion of this structure, Federal facilities will have increased about one hundred per cent. during the past year.

This added manufacturing capacity will, however, suffice to meet the immediate demands only. It will be necessary to further extend the present plant in order to care for the constantly growing business of the company. To this end, plans for other new buildings are now in course of preparation.

In its eight years of corporate existence, the Federal Motor Truck Company has experienced a steady, consistent growth, unmarred by those eruptions in financing and organization which have marked so many other ventures in the automobile business within those years. Distinguished by a stability of growth such as only a few other manufacturers in the same line can boast, the company's capitalization has increased from $50,000 to $2,000,000 and it is looked upon financially as one of the most substantial of the motor corporations now in existence.

* * *

Perforated Metal

Fineness of grain is a question that is causing much discussion among Ceramic Engineers, and it is generally accepted that uniformity of size of grain is a necessary requisite of better manufacturing conditions.

Perforated metal screens are being used more and more because of the many satisfactory ways in which they serve. The size of grain passing thru is always the same, there are no wires to break, or to spread, and the screen wears for a longer time than any other type.

Due to being made of perforated metal sheets of any desired thickness, it wears for a long time, and resists the pounding of the material and of the men employed.

The Harrington & King Perforating Company, located at 635 N. Union Street, Chicago, Illinois, are manufacturers of all kinds of screens made of perforated metal. They are used in pulverizers, crushers, dry pans, and principally in inclined screens for screening crushed material. Any size of slot or hole, thickness of metal, and any kind of metal may be secured to suit your conditions.

For full and complete information in catalog form, address the company in Chicago.

* * *

Lakewood Opens New Office

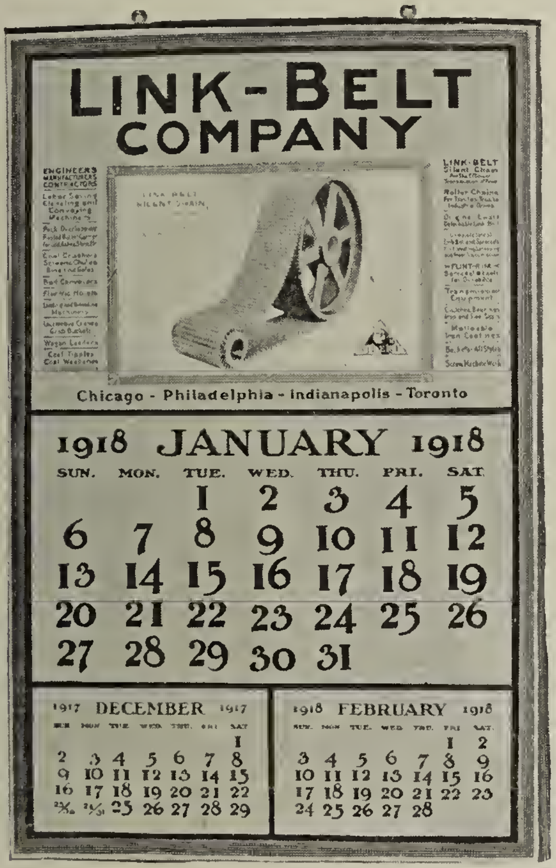
Carleton R. Dodge, recently of C. R. Dodge & Company, 141 W. 42nd Street, New York City, has accepted an appointment with The Lakewood Engineering Company as Assistant Sales Manager in charge of the Philadelphia territory.

The new offices of Lakewood are on the tenth floor of The Widener Building in Philadelphia, Pennsylvania.

* * *

Have You a Calendar?

If you want one that can be easily read across the room, and which is also attractively printed, send your request to the Link-Belt Company of Chicago.



LINK-BELT
COMPANY

Chicago - Philadelphia - Indianapolis - Toronto

1918 JANUARY 1918

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1917 DECEMBER 1917

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1918 FEBRUARY 1918

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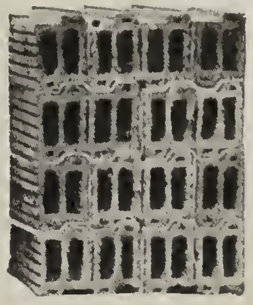
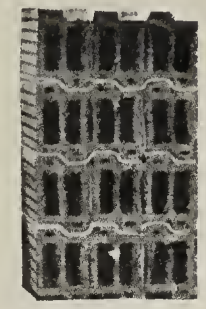
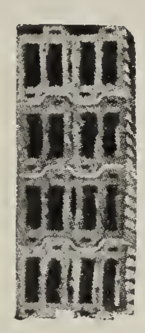
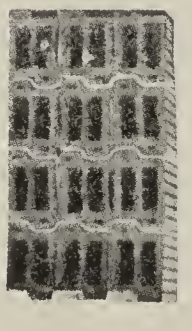
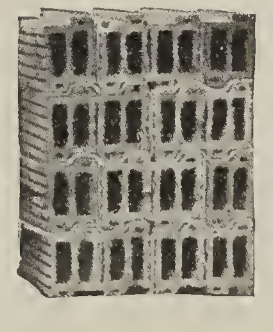
Do You Want One of These Handsome Calendars?











There is going to be an enormous amount of building.

There is a surplus of common brick being made.

Architects and Builders favor Hollow Ware.

The BEST Hollow Ware will get the "call" under any and all circumstances.

"LOXALL" is Best Hollow Ware —different from all others.

It is being licensed in all territory in the U. S. A. Write for territorial assignment contract —from

J. E. EXNER
602 LINCOLN STREET
COFFEYVILLE, KANS.

Loxall is Patented in U. S. A. and Canada

SAY I SAW IT IN BRICK AND CLAY RECORD

To the man who wants to know —who must know — who is determined that *he will know more* about the manufacture and use of refractories

WE OFFER THIS BOOK

Havard's

Refractories and Furnaces

To briefly outline its contents—It clearly describes and illustrates the preparation of silicious refractories, refractory clays, and basic and neutral refractories.

It describes the **kind of refractories used,** and their application in the manufacture and metallurgy of iron, steel, copper, lead and silver.

It tells about the refractories used in Chemical and Electro-Metallurgical industries. And then it describes the manufacture of refractory hollow ware, heat measurement, mining, and finally the making and burning of common clay brick.

We do not believe that a more valuable book could be purchased, and we are enthused over this idea—it should be in every single clay products plant in the United States, whether you manufacture refractories or non-refractories, you cannot afford to be without it.

Send $4.00 to

BRICK & CLAY RECORD
BOOK DEPARTMENT
610 Federal St. Chicago, Ill.

The accompanying photograph shows the exceptional value of the calendar, which is printed in three colors, contains twelve sheets, and has a separate illustration on each page.

To responsible firms and individuals the calendar will be sent gladly upon request and without obligation .

* * *

The American Ring Pulverizer

A recent test conducted with the American Ring Pulverizer showed that when using one-eighth-inch grate bars and a ten mesh screen, that limestone is pulverized to the following sizes: 77 per cent passing thru a 14 mesh screen; 48 per cent passing thru a 40 mesh; 27½ per cent passing thru 100 mesh; and 15.3 per cent passing 200 mesh. The power consumption is only four horsepower per ton per hour.

This is indicative of what can be accomplished in grinding silicate rocks, such as quartzite, ganister rock, silicious fire clays and all similar hard gritty materials that are used today in the refractories field.

In grinding clay an example is cited where the Decatur (Ill.) Brick Company is grinding thirty tons of clay and shale per hour, with the No. 48.

In grinding wet clay, it is preferred to mix the material with sufficient grog, dry clay, bats, dry house breakage, etc., to clean the grates, which enables the machine to handle clay very wet.

The secret of the success of the Patent American Ring Pulverizer is the ring, and the pulverizer is enabled to do work successfully that is unequalled in any other machine.

Recently the American Pulverizer Company moved from their old location in East St. Louis, Illinois, to St. Louis, Missouri, at 18th and Austin Streets.

* * *

Confidence

Confidence in a product, in a machine, engendered by performance of that product or machine, is the very best equipment for any Sales-Engineer, when he goes out to sell.

Thompkins, of Sauerman Bros., goes out to sell; he takes with him Confidence, engendered in him by performance—of Sauerman's Dragline Cableway Excavators.

He says—"I have a little foolish idea—that everybody who has use for our product—*can be sold.*" Read it over, study it, and get a sermon out of it that will put determination to sell your product, clear up to capacity, into your sales system—and all you need is Confidence in the goodness of your product.

Sauerman Dragline Cableway Excavator.

BRICK and CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

In Times of War Prepare for Peace

IT WOULD TAKE more of a prophet than we pretend to be, to be able to predict just what the result will be of the current peace talk. Few of us are able to judge, honestly, as to the sincerity of the Central Powers in their desire for peace, and who of us knows the mind of the military party in Germany and can say that it is really desirous of entering into negotiations on the basis of the terms which the allies have offered.

This much is certain, however, that it behooves every clay products manufacturer to keep an eye on possible developments in the event of peace this year. We believe that money spent for the purpose of keeping clay products before the public with a view toward securing a good share of the building material business after the war, is a mighty good investment. You can hardly find a man who will not agree with you that, while present conditions are not all that is desired, there will be a great burst of construction following the cessation of hostilities.

The Father of Our Country has said, "In times of peace prepare for war." We do his revered memory no violence when we say that this thought might be reversed with profit to ourselves as a group of the nation's business men.

Don't throw your publicity or advertising plans into the waste basket because your plant is not operating to capacity and orders are not coming in thru every mail. Remember the time will soon come when you will want to have an inside track in the public's mind and you will want its good will.

To be forewarned is to be forearmed. If this is fair warning to you as a clay products manufacturer then forearm yourself with the powerful weapon of publicity in preparation for a big "drive" upon the piles of gold that will be expended for building possibly during the coming year.

⁂

Priority Order No. 2 Suspended

THE SIGNIFICANCE of the suspension of Priority Order No. 2 by Judge Lovett, taking effect December 31, is that government control of the railroads is destined to relieve traffic congestion to such an extent that road work will be permitted to proceed. It will be remembered that this order forbade, among other things, the shipment of materials for highway construction in open top freight cars.

This is a happy development and an action on the part of the government that is highly commendable. The need for the construction of necessary roads at this time is exceedingly urgent. It is reported that highway officials all over the country have been anticipating this action and are already preparing plans for the vital and important highways that will be constructed this year between important industrial centers, and as extensions to terminal facilities—the last affording opportunity for the delivery of freight from factories or warehouses to places outside of yard limits which may be reached by motor truck over well paved roads. From all indications, the breaking up of the winter will witness an encouraging resumption of highway construction.

⁂

Chopping Up Our Country

A BILL was rushed thru Congress at its last session as a part of the war revenue bill. It is now law, and provides for the zone system of second class postal rates.

Handling the matter from the standpoint of publicists discharging a duty they owe their readers and their country, rather than business men who are threatened with unfair, discriminatory and oppressive tax-burden, we wish to point out the dangerous, reactionary effects of this legislation which will destroy or seriously cripple the national avenues of intelligence.

The postal section of the revenue bill will go into effect next July unless repealed at this session of Congress. These rates when finally in full operation will impose carrying charges upon newspapers and periodicals that will be from eight to forty times higher than the present rates on second class matter in Canada. The present uniform flat rate of one cent a pound in this country will be increased from fifty to nine hundred per cent. Knowledge and information will be forced to travel upon a mileage ticket, and to hurdle barbed wire entanglements of increasing size at the beginning of each zone.

Masons and Dixon's Line, the lack of understanding between the North and the South, led to the Civil War. This impossible zone system of second class rates will create eight Mason and Dixon Lines. It will tend to disintegrate instead of uniting; it will widen instead of obliterate the distances between the minds of our citizens. Such is not the function of a post office department which was established to encourage the freest communications between all sections and all citizens.

Senator Smoot has introduced a bill—S 2985—in Congress, calling for the repeal of the increased second class rates. You are urged to write your congressmen asking their support for this bill.

The battle is largely yours since you are the one who will be affected by the discontinuance of trade publications or their decreased efficiency, due to the unbearable second class postal rates now on the statute books.

* * *

Essential and Non-Essential Building

FOLLOWING along the line of the editorial which appeared on page 1112, of the December 18, 1917 issue of *Brick and Clay Record* under the heading "A Federalized Building Industry," we wish to call attention to the large amount of building which may probably be called essential even in the very midst of the most compelling war demands.

1. All building required for speed, efficiency and the largest possible production of industries furnishing munitions of war of any kind.

2. All residential and apartment construction required for the proper housing of these hundreds of thousands of employes suddenly brought to the industrial centers to man the war industry plants. Here state and national government housing programs, involving hundreds of millions of dollars are now being urged in municipal, legislative and congressional assemblies. The waste of efficiency, and the serious loss from constantly shifting and dissatisfied labor is the most imperative argument on behalf of this item.

3. The organization and carrying out in the largest possible measure of local, county, state, and national road improvements of public highways, whose present crude and raw condition costs America between three and four hundred million dollars annually in unnecessary transportation expenses.

4. The construction materials of all kinds required for the adequate maintenance of railroad transportation and equipment.

5. A country-wide development of needed farm improvements and equipment to more adequately care for raw materials, prevent waste and provide for the immensely expanding needs of the whole world for food and clothing. This includes construction of new barns, silos and the meeting of drainage and sanitation requirements.

6. Construction to meet the needs of the natural expansion of population, including manufacturing industries which supply the daily requirements of the people, and an irreducible minimum of home building, schools, etc.

7. All construction required by the natural deterioration of property, i. e., all necessary repairs and the rehabilitation of buildings of whatever nature, already erected. This is, of course, a very vital item, which hysteria and popular anxiety over war conditions may unduly and unwisely arrest.

8. The constant needs of certain sorts of public building construction, especially those serving the purpose of health and charity. In this connection Canada reports a large expenditure of public funds in the erection of hospitals and homes for thousands of disabled soldiers, who could not otherwise be cared for.

Every one of the above sources of construction is vitally necessary, if the nation is to conserve her civilization and render efficient aid to the various departments of military administration.

In contrast with this tabulation of essential wartime construction, there are certain species of building which can scarcely be considered necessary. They include construction for the most part of places of amusement, industrial enterprises producing luxuries or otherwise superfluous wares, multiplication of saloons, liquor manufacturing establishments, little shops of every kind which merely duplicate for purposes of private gain, stores already in operation, and in general, every kind of lavish expenditure for residences, churches, public buildings, etc., that could be postponed easily until more normal times.

Concrete steps toward a nationally organized building industry, as the result of wide spread discussion, are crystallizing in aggressive action. In many sections thruout the country, New York, Minneapolis, New Orleans, Los Angeles, Louisville, Cleveland, and Pittsburgh, within the past few months, have been held notable conferences, suggesting a definite program, looking toward the thoro amalgamation of all building interests in the United States. This cannot fail to be of immense benefit to the entire clay products manufacturing business of the country.

Are You Reading the Fuel Articles?

Scarcely any other subject is of such prime importance to you at the present time. Coal is not only extremely costly, but its shortage carries many dire aspects. Conservation, therefore, may not only mean the saving of money heretofore spent in the purchase of coal wasted, but it may also decide whether your plant is going to keep running. To help you conserve, "Brick and Clay Record" has prepared a series of articles on fuel topics that will show you how to get the greatest amount of heat value from your fuel. The second article appears on page 133 of this issue. Read it and watch for the next—but do not forget that one has already appeared.

SPEED UP DRAIN-

Every Indication Is Pointing to the Fact that Drain
Conduct of the War, if a Classification of Essentials
Boosters for the "More Drainage, More Food"

AS GOOD NEWS as could come, perhaps, to one branch of the clay products industry, under the unsettled wartime conditions, is to be found in the statement made for *Brick and Clay Record* by Uncle Sam's experts on farm drainage to the effect that they expect uninterrupted progress in the work of providing drainage and irrigation systems on American farms. Indeed, the U. S. Department of Agriculture is doing all in its power to speed up the movement for better farm drainage. It is argued that it may be necessary, as a concession to war conditions, to slow down on road construction which has no military value, but that nothing should be allowed to interfere with drainage and irrigation work. The latter bears direct relation to the productiveness of American farms; and maximum agricultural production is essential in meeting the war needs of the United States and her allies.

Not only is the department of agriculture encouraging farmers, as a general proposition, to put in drainage systems but the Office of Public Roads and Rural Engineering has latterly set about the encouragement of co-operative drainage projects carried out by the joint effort of the farmers in a section or locality. At this writing there has lately been commenced at Washington an investigation of the methods of distributing the cost of district drainage among the various beneficiaries.

Coming even closer to the interests of the drain tile branch of the industry is the exhaustive study which this branch of the agricultural department is now making of the capacities of tile drains. The laboratory studies of tile drains which have been in progress at the government farm at Arlington, Virginia, are nearing completion and the specialists are now taking up, to the same investigative end, field studies of actual drainage systems where tile is in use exclusively. As one means of proving the value of tile drainage, observation wells have been installed in tile-drained fields and in comparable undrained land on farms in North Carolina, South Carolina, Georgia and Arkansas. This will afford a means of showing the effect of underdrainage upon the elevation of the ground-water table and ought to be the means of inducing many farmers, who have heretofore held back, to invest in tile drainage.

FREE DISTRIBUTION OF DRAINAGE PLANS

Uncle Sam is also acting in the role of booster for the business of drain tile manufacturers and distributors by his practice of giving free advice to tillers of the soil who contemplate putting in drainage systems. The department of agriculture offers, without charge, to work out and transmit to land owners detail plans and cost estimates for tile drainage systems. During the year 1917 hundreds of such plans were prepared for farmers who thus made live prospects for sales of drain tile.

From the standpoint of the industry as a whole, the work of the department of agriculture in behalf of better irrigation on American farms may be placed in the same category as the drainage work since the ultimate effect is to improve the market for clay products. In the irrigation section of the governmental program there is at least one project that promises to prove of much value to the industry. It embraces the experiments that have lately been inaugurated at Vineland, New Jersey, to test the practicability of clay tile wound with wire and laid in concrete for distributing pipes in farm irrigation plants.

The drive that the rural engineering section of Uncle Sam's "farm annex" is making to promote the more extensive use on the farms of modern domestic water supply and sewage disposal systems also has its significance for the clay products industry, as may readily be surmised. Studies of well casings, etc. are made for perplexed farmers and within recent years the scope of the governmental work in rural engineering has been gradually expanded until it embraces almost the entire range of farm buildings. It may be cited, for instance, that during the year just closed the government engineers prepared for free distribution to farmers working drawings covering hollow-tile dairy barns and general barns and tile silos.

DRAIN TILE MAKERS, ATTENTION!

The United States Department of Agriculture has made the subject of its December 26, Weekly News Letter one of great interest to manufacturers and distributors of drain tile. In it the department urges that America's farmers turn those "Idle Acres" hidden in out-of-the-way corner of their property into productive land by draining it. The national food emergency has given rise to the appeal which is but one of those designed to increase the yield of American farms.

It requires but little imagination to realize what a tremendous increase in production would result if every idle acre, now too wet to be tilled, were drained and made to contribute its share to the food supply of the nation.

The letter bears the stamp of governmental authority and should be given wide publicity. We suggest that drain tile manufacturers take the letter, which follows, to their newspapers for publication, and send it to those farm journals with which they are familiar.

IDLE ACRES

Nearly every farm has some portion of it that is either not used at all or is used in such a way as to produce very little. On many farms there are patches of low ground which cannot be tilled because they are too wet. Usually when drained these wet areas are the richest land on the farm.

Just at present, when the world is engaged in the most gigantic struggle in its history, the forces of democracy against those of autocracy, the product of these idle acres is needed. This is an excellent time to put them into use. Small patches of wet land can be drained at small expense. Between now and the opening up of spring work

AGE URGES U. S.

Tile Will Be Considered an Essential Product in the
and Non-essentials Is Made—One of the Biggest
Movement Is the U. S. Department of Agriculture

there is ample time to do the work. This year the farmer has been able to sell his products at a fair price and has the money with which to buy the tile. Every farmer, part of whose farm is unproductive because it needs drainage, should take advantage of the present opportunity to add to his cropping area by supplying the necessary drainage. These lands will produce more than average farm lands. Every product will help to win the war.

* * *

Pittsburgh Outlook Promising

Only one thing will prevent or hold back a large amount of building in the Pittsburgh (Pa.) and Tri-State territory during the coming spring and summer, and that will be the future policy of the banks and other financial institutions in announcing their willingness to make loans for building construction purposes. There are plenty of prospective land buyers and prospective home builders, which, coupled with the acute demand for houses, make the outlook in the building brick industry very much more promising. It is pointed out that the financial institutions, heretofore always anxious to handle high-class first mortgages, are now placing possible future government requirements above everything else. This action, of course, is most commendable, and is being upheld by every true American. But, should the financial interests loosen the purse strings just a little, the prospective builder in this district will waste no time in placing his construction order.

Real estate men and builders, as well as a number of manufacturers point to the need of additional homes. It is agreed that more houses and apartments will have to be built as a matter of necessity in order to care for the constant growth of this territory. The building brick manufacturers in the western Pennsylvania, eastern Ohio and West Virginia district, which is known here as the Tri-State territory, declare that no trouble exists to sell their product, but that the existing car shortage is sorely hampering their maximum activity just now. The action of the government in taking over the railroads will, it is said, release a number of cars and bring about a quicker movement of freight.

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Fellowships Offered At University of Illinois

To extend and strengthen the field of its graduate work in engineering, the University of Illinois maintains fourteen engineering station research fellowships. Included among these is at least one fellowship in ceramic engineering. These fellowships, for each of which there is an annual stipend of $500, are open to graduates of approved American and foreign universities and technical schools. Appointments to the fellowships are made and must be accepted for two consecutive collegiate years, at the expiration of which period, if all requirements have been met, the degree of Master of Science will be conferred.

Nominations to the fellowships, accompanied by assignments to special departments of the engineering experiment station, are made from applications received by the director of the station each year not later than February 1. The nominations are made by the station staff, subject to the approval of the executive faculty of the graduate school and the president of the university. Nominations are based upon the character, scholastic attainments, and promise of success in the principal line of study or research to which the candidate proposes to devote himself. Preference is given to those applicants who have had some practical engineering experience following their undergraduate work. Appointments are made in the spring and they take effect the first day of the following September.

These fellowships afford those interested in ceramics and who are desirous of doing further study in this kind of work, an excellent opportunity to obtain expert knowledge on ceramic subjects.

* * *

Barbour of Metropolitan War Expeditor

J. G. Barbour, of the Metropolitan Paving Brick Co., Canton, Ohio, has been appointed Federal Industrial Expeditor of the Canton district by the War Department. It will be the duty of Mr. Barbour to keep in close touch with all manufacturers of war materials in his district to determine the co-operation of these plants with the government—work similar to that to be done by Fred L. Dickey, general manager of the W. S. Dickey Clay Manufacturing Co., of Kansas City, Mo., who has been appointed Federal Expeditor in that territory, when the need arises. A slight error crept into the item published in the January 1 issue, announcing Mr. Dickey's appointment, the statement being made that he was to receive the munificent salary of $1 a year for his services. The fact is that the position is barren of renumerative inducement, not one "red cent" being paid to those acting in that capacity.

* * *

New Jersey Terra Cotta Companies Combine

Altho retaining their corporate names of the New Jersey Terra Cotta Co. and the South Amboy Terra Cotta Co., both of South Amboy, N. J., these two firms, on January 1, merged their interests and united under the name of the Seaboard Clay Manufacturing Co. with a capital stock of $800,000.

The new concern takes over all the real estate, assets and equipment of the New Jersey Terra Cotta Co. and of the South Amboy Terra Cottta Co., also all the stock of the Kansas City Terra Cotta and Fiance Co., of Kansas City, Mo. The latter company has been owned by the same men who are in possession of stock in the two other companies that make up the new concern. Both the New Jersey Terra Cotta

Co. and the South Amboy Terra Cotta Co. have always been close corporations, their stock being held entirely by a small group of South Amboy men.

The New Jersey Terra Cotta Co. has manufactured architectural terra cotta continuously for thirty years. It has a large and well equipped plant in Catherine street, bordering on the Central Railroad of New Jersey. Under normal conditions it employs about 400 men. The South Amboy Terra Cotta Co. has been in operation for about fifteen years. The plant occupies about three city blocks in South Amboy and under normal conditions it employs about 200 men.

The products of these companies have, by the distribution of their terra cotta thruout the United States and Canada, become so favorably known to architects and builders that the factories will continue to operate under their present well established corporate names, and without change of management. It is assumed that the consolidation will permit of many economies, both in purchasing and manufacturing, as well as provide a greater capacity for work.

The Seaboard Clay Manufacturing Co. is now the second largest terra cotta company in the eastern states. The officers of the New Jersey Terra Cotta Co., who continue as formerly, are: Karl Mathiasen, president; Eckart V. Eskesen, treasurer and general manager, and Karl Mathiasen, Jr. secretary. The officers of the South Amboy Terra Cotta Co., who also remain the same under the new organization, are: Christian Mathiasen, president; William Mathiasen, vice-president; Peter C. Olsen, treasurer and general manager.

* * *

WAR PROBLEMS FAIL *to* SUPPLANT CLAY PRODUCTS INVESTIGATIONS

"FULL SPEED HEAD" on clay products experiments and investigations is the order at the United States Bureau of Standards at Washington, D. C. despite the fact that Uncle Sam's great research and testing laboratory is engaged upon many special war problems. Incidentally, it may be mentioned that these war responsibilities have launched the government scientists into kiln work of a character heretofore unknown in this environment, namely the effect of kiln drying on spruce timber such as is employed in aeroplane construction and now in such great demand.

The past few weeks has seen the completion of one of the most important investigative projects that has been undertaken by this branch of the government, namely the investigation of the load-bearing value and other properties of large brick piers. This investigation was conducted in co-operation with the National Brick Manufacturers' Association and involved tests of more than fifty brick piers of large size. In the construction of these test piers there were used three grades of brick from each of four widely separated districts east of the Mississippi River.

Scrutiny was made, among other inspections, of the various types of bonding adapted to such work and of the different grades of mortar employed. Not only were the piers subjected to test but auxiliary tests were conducted on the materials used. In the erection of all of the test piers every effort was made to conform to the best modern practice in brick masonry. While only the detailed showings from all the comparative tests will, perhaps, fully satisfy the curiosity of the men in the industry it may be of interest to mention certain general conclusions in advance of the publication of the official report now in preparation.

MORTAR MOST IMPORTANT FACTOR

It was demonstrated that the quality of the brick and mortar used is unquestionably the most important factor in determining the strength of any brick pier. The government tests showed that cement mortar will develop about twice the strength of lime mortars. The respective mortar records, in use with the highest grade of brick, are 2,700 and 1,400 pounds per square inch. By reason of the difficulty in working a straight cement mortar, however, the government experimenters employed, for the construction of their test piers, a combination lime and cement mortar, mixed on the basis of one part of cement and lime to three parts sand.

A conclusion was reached following the tests that the type of bond as concerns the number of header courses used has little, if any effect, upon the ultimate strength of the piers. The transverse rather than the compressive strength of individual brick also appears to bear closer relation to the ultimate strength of brick masonry. The federal testers and experimenters made a trial of the plan of introducing wire mesh in the horizontal joints of brick piers and their deduction is that whereas the wire mesh will add strength if used on all the joints it is of little benefit if used only on every third or fourth course. Indeed, there are circumstances in which such intermittent use of wire mesh will actually decrease the strength of the pier.

A brick project upon which the experts at the U. S. Bureau of Standards are making progress is that which aims at the evolution of sand-lime brick of better quality and less cost thru improvement of the methods of manufacture. As a first step in this research, effort was made to determine the effect of various factors upon the properties of a brick made of lime and sand, both of very fine size of grain—that is, smaller than 200 mesh. The outcome was that a decidedly stronger brick was obtained with a composition of equal parts by weight of lime hydrate and sand than was possible with any other proportion. With that as a starter the investigation is now being continued, using graded sand to replace the 200 mesh sand. Thus far the tests indicate 10,000 pounds per square inch as the best molding pressure. Future studies will deal especially with the compressive strength, transverse strength, and absorption of the brick.

SILICA BRICK TESTS NEARLY COMPLETED

Yet another line of work at this investigative headquarters—and one that is now in its final stages—is the silica-brick investigation which has been in progress since the early part of 1916 and the formal announcement of the results of which may be expected shortly. It is claimed that one of the most important results of this study has been the discovery of simple tests for detecting inferior products. As a key to such detection there has been established the fact that well-burned silica brick should show a specific gravity of not more than 2.36 and upon refiring to 1,500 degrees C a linear expansion of not more than 2 per cent. in terms of the original length. Additional laboratory buildings now in course of erection at the bureau of standards will give added facilities for the elaborate program of clay products experiments and investigations projected or under way.

WAR'S EFFECT *on* BRICK *in* SPAIN

IT WILL BE RECALLED that in the October 23 issue of *Brick and Clay Record* there appeared a very comprehensive report of the conditions of clayworking industries abroad, which have been brought about by the war. Information was received from Great Britain, Holland, Sweden, Italy, and the Dominion of Canada, in response to an inquiry sent out by the American Face Brick Association, asking for the experiences of the foremost face brick manufacturers upon the following subjects:

(A) The demand for these materials during the first six months of the war; (b) the demand during each year 1915, 1916, and 1917, as compared to normal years; (c) the present percentage of production as compared to normal; (d) the present approximate amount of building as compared to normal; (e) the kind of building comprising the major portion of present structures; (f) whether residential construction is going forward and to what extent, comparatively; (g) the approximate percentage increase in present price of these materials to the consumer compared to that prevailing during the spring of 1914, and (h) whether these materials are being used as a war commodity, and, if so, in what ways?

Another very interesting letter comes from Carl Bailey Hurst, American Consul-General, Barcelona, Spain. The contents of Mr. Hurst's letter discussing the conditions of the burned clay industry in Spain since the beginning of the war are as follows:

"Referring to my letter of August 14 in acknowledgment of your letter of June 22, I now send you the results of my inquiries on your behalf concerning the face brick situation in Spain.

A leading brick manufacturer and also a man well posted in all construction work has been interviewed and it is evident from their replies that conditions in this line of manufacture differ here largely from those in the United States. There is only one firm in Spain that manufactures face (also termed "front" and "pressed") brick and this plant cannot produce more than 20,000 brick per month.

(a) During the first six months of the war the demand for these brick in Spain was greater than could be supplied by this concern.

(b) The demand for face brick during 1915, 1916, and 1917, as well as in normal years has always been greater than 20,000 brick per month, and the firm manufacturing them has never been able to cover the demand.

(c) The present percentage of production as compared to normal has not changed, the factory producing face brick turning out regularly all that it is capable of manufacturing. In spite of the great rise in price the demand still exceeds production, which is limited to 20,000 brick a month.

(d) Building conditions here have suffered greatly from the prolonged strike of laborers engaged in building and construction work. In January, 1916, the bricklayers struck and were followed by other workers on buildings. The latter resumed work on February, 8 per cent. increase in wages having been granted, but the bricklayers' strike continued. An offer of the contractors of $0.18 more a day if the day be lengthened to 9 hours was refused by the strikers. Finally, after the strike had lasted over 3 months, the bricklayers went back to work accepting $0.09 per day increased wage

(e) The buildings comprising the major portion of present structures in Spain are of rough brick, the exterior entirely covered with a kind of concrete stucco. These rough brick of common clay, baked, unglazed, for the construction of buildings, are made in large quantities here. According to statistics of the industrial tax collector's office, there are in Spain, exclusive of the Vascongadas and Navarre provinces, 2,245 plants for making common brick, roofing tile, and pavement brick. In the year 1914, about 13,000 tons of common brick were exported. This export fell in 1915 to 6,000 tons and in 1916 to somewhat less than 4,000 tons, chiefly owing to the high freight rates, leaving little or no profit in the business, and also on account of lessened numbers of vessels not required for other merchandise.

Small tiles and mosaics of fine baked clay, gres or faience and glazed tiles are extensively produced here and are employed almost exclusively in this country for flooring, roofing and exterior decoration as well as interior wall facings. There are 179 factories in Spain, exclusive of the Vascongadas and Navarre, for the manufacture of roofing tile, pavement tile, hollow and solid tile and mosaics. Exports of tile, roofing tile, and mosaics amounted in 1914 to 7,000 tons, in 1915 to 6,000 tons, and in 1916 to nearly 9,000 tons.

(f) Residential construction is going forward in Spain to almost the same extent as before the war.

(g) Face brick in normal times cost $10.80 (pesetas 60) per thousand but, at present, owing to the great rise in the price of coal, they are sold at $19.80 (pesetas 110) per thousand. The approximate percentage increase in the present price of these materials to the consumer, compared to that prevailing during the spring of 1914, is 85 per cent.

The prices for ordinary building materials in Barcelona and vicinity, which may be taken as indicative of those in other parts of Spain, were in January, 1917, as follows:

	Pesetas
Sea sand (in vicinity of Barcelona)	3.50 to 4.50 per cubic meter
Stone from Montjuich (in vicinity of Barcelona)	3.00 per 1000 kilograms
Stone from Montjuich (broken and carted to place where used)	3.75 per 1000 kilograms
Cement (rapid)	33.00 per 1000 kilograms
Cement (slow)	30.00 per 1000 kilograms
Cement (Portland, Ashland)	70.00 per 1000 kilograms
Cement (Portland, ordinary)	40.00 to 50.00 per 1000 kilograms
Lime (hydraulic)	27.50 per 1000 kilograms
Chalk (ordinary)	19.00 per 1000 kilograms
Chalk (white Ripoll)	23.00 per 1000 kilograms
Bricks 5½ cm. thick	40.00 per 1000 kilograms
Bricks 4½ cm. thick	35.00 per 1000 kilograms
Tiles (ordinary)	25.00 per 1000 kilograms
Tiles (Valencoa 20x20 white)	18.00 per 100 kilograms
Steel girders	51.00 per 100 kilograms
Lead pipes for water and gas	96.00 per 100 kilograms
Lumber (Russian building pine)	200.00 per cubic meter

(h) Neither face brick nor common brick of Spanish manufacture are being used as a war commodity at present.

I trust that the information gathered for you may be helpful to the cause of American face brick manufacturers and I assure you that I shall always be glad to be of service to you.

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New Type of English Hard Porcelain

A new type of hard porcelain that posseses two important advantages has been evolved thru researches undertaken by the Central School of Science and Technology in Stoke-on-Trent, writes Consul Robert S. S.

Bergh, Stoke-on-Trent, November 9. The experimenters sought to produce a hard porcelain made wholly of British materials and to compound a body that would "pot" like ordinary earthenware. Specimens of ware exhibited show that both these objects have been accomplished.

The body of the new porcelain is as cheap as or cheaper than ordinary earthenware. The glaze (leadless) is about one-tenth the price of earthenware glaze. Particular satisfaction is expressed with the glaze, which, when fired under suitable conditions, seems equal to anything yet marketed. The firing margin is very large. The kiln which was built for experiments—an entirely new type—has proved a great success, and there is no reason why a development of this kiln might not be used in the production of ordinary earthenware.

Little difficulty was anticipated with the fire clays, since it was known that there are many suitable fire clays in the country. The saggers used have stood remarkably well, in fact, not more than two or three saggers were lost in over twenty firings to temperatures ranging from cone 10 to cone 16. The ware produced is capable of being successfully decorated with ordinary colors. People acquainted with hard porcelain know that this is not possible with some types. A great defect attaching to the Continental hard porcelain is the limitation of the colors that can be applied.

The firing of the new porcelain is the point that will be regarded most seriously by the manufacturer contemplating its production. The new ware can be fired in either "oxidizing" or "reducing" atmospheres, but the best results are obtained by the "reducing" method, which will involve important modifications in the firing practice now obtaining.

Many interesting problems in connection with the firing have arisen and much work has yet to be done. At present the experimenters are concentrating on faults in manufacture, so that the more probable sources of difficulties and losses will be known. The examination of these is necessarily slow, as it is not possible to fire oftener than once a week if they are to fire under manufacturing conditions.

SUBSTITUTES *for* WOOD INCREASING

TWENTY-FIVE YEARS AGO lumber was regarded as almost as much of a necessity as wheat, while today it is steadily being replaced by various substitutes, says a report by the forest service on "The Substitution of Other Materials for Wood."

Disregarding the temporary effect of the war, with its sudden demand for lumber and its great enhancement of prices of many substitute materials, the report points out the tendency in the long run. Each year more steel, concrete, brick or tile is being used in places where lumber was formerly employed. This is particularly true in cities where enactment of building codes and the development of new forms of construction have created demand for more durable building material. Shingles have given way largely to composition and tile roofings, wooden sidewalks have been almost wholly replaced by cement, while the modern skyscraper with its steel framework and stone, brick, or tile walls occupies the site of some former frame structure. Railroad crossties and mine props are about the only forms of wood which are not affected.

How hard this substitution has hit the lumber business is shown by the government estimate that the total replacement of lumber in all forms of use is 8,000,000,000 board feet, or 21 per cent. of the lumber consumption of the United States in 1915. The rate of substitution seems to be increasing and is now in excess of 500,000,000 board feet a year. Approximately 70 per cent. of the lumber cut goes into forms of use whose demands appear to be decreasing. Twenty per cent. more goes into strongly competitive fields. In the remaining 10 per cent. of wood uses, there seems to be a much better opportunity for a larger consumption.

PRICES NOT LOWERED

Increasing substitution has not, however, lowered lumber prices to the consumer, the report points out. On the contrary, they have steadily advanced, while the cost of many substitutes has decreased. Exhaustion of the stands of local timber and discovery of new sources for the manufacture of other building materials are given as some of the reasons for these changes. More than 75 per cent. of the replacement of wood, however, is made in spite of higher initial cost of the substitute.

The effect of the growing use of other materials has been to accentuate competition and decrease profits in the lumber business. As a result of this and other reasons, alternate periods of curtailment and over-production have made the lumber market unstable. This in turn has resulted to the disadvantage not only of the persons whose money is invested in timber and sawmills, but to the many hundred thousands who are dependent upon the lumber industry for their living.

Lumbermen have felt, it is said, the effect of the replacement of their product by other materials, but have not realized the extent to which it had taken place. They have failed to adopt aggressive selling methods and have been unable to supply the consumer with reliable information regarding lumber, because they did not have it. A complicated system of grades is in use which is not intelligible to the average consumer and is even the subject of considerable dispute among lumbermen.

Manufacturers of other building material have spent large sums of money to obtain reliable information about their products. They have had to advertise extensively to make a "place in the sun" for themselves. Substitutes for lumber are guaranteed to meet specifications which are easily understood by the consumer. These facts, the report states, have combined to make the substitutes increasingly popular.

For lumbermen to hold their markets against competing materials, it will be necessary for them to learn more about the fundamental properties of wood, the author of the report says. They can do this either by scientific research for themselves or by co-operating with agencies already established. Better manufacturing and selling methods and the development of by-products should enable them to make a profit in spite of the limitations on the prices of lumber which may be imposed by competing substitutes.

USING INSTRUMENTS *in* DETERMINING PROPER BURNING CONDITIONS

Briefly and Interestingly Outlining the Functions and Applications of the Pyrometer, Draft Gauge, and Orsat Apparatus in Controlling Kiln Temperatures and Atmospherical Conditions

By S. C. Karsen

Superintendent, American Sewer Pipe Co.,
Uhrichsville, Ohio.

ALTHO THE MAJORITY of clay product manufacturers understand the principle of the pyrometer, draft gage, and Orsat apparatus there seems to be a woeful lack of judgment in the application of these instruments on the plant. For instance, instead of using the pyrometer as a tool with which to bring about a better or a shorter burn it is more frequently used merely as a check on the burner, arousing his antagonism and nullifying whatever good the instrument itself could accomplish.

Exhaustive descriptions of different pyrometers on the market have been given in past articles in *Brick and Clay Record* and therefore they shall be given little attention here, except to tell in a few words its practical application. The base metal couple is of course a cheaper installation, and its upkeep is also less than any other type. However, for temperatures exceeding cone 1, this type of pyrometer is not reliable. While the rare metal instrument is considerably more expensive, for high temperature burns and with ware requiring careful handling, it is the most reliable and in the long run the cheapest installation.

An important factor in the success of any pyrometer installation is the position of the couple in the kiln. There are several places where it may be inserted in the kiln, such as in the kiln door, the crown, or in the kiln wall. I have tried all three of these positions but find that the most satisfactory installation is thru the kiln wall directly between the bags, and at a point several feet above them.

This position has many advantages, some of which are: there is no fluctuation in temperature registered by the galvanometer such as occurs when the couple is inserted in the kiln crown; there is no cooling action similar to that which often occurs when the couple is inserted in the kiln door, and it is also well out of the way and cannot be disturbed or broken. Furthermore, the junction between the couple and the lead wires remains fairly cool, preventing errors from this source.

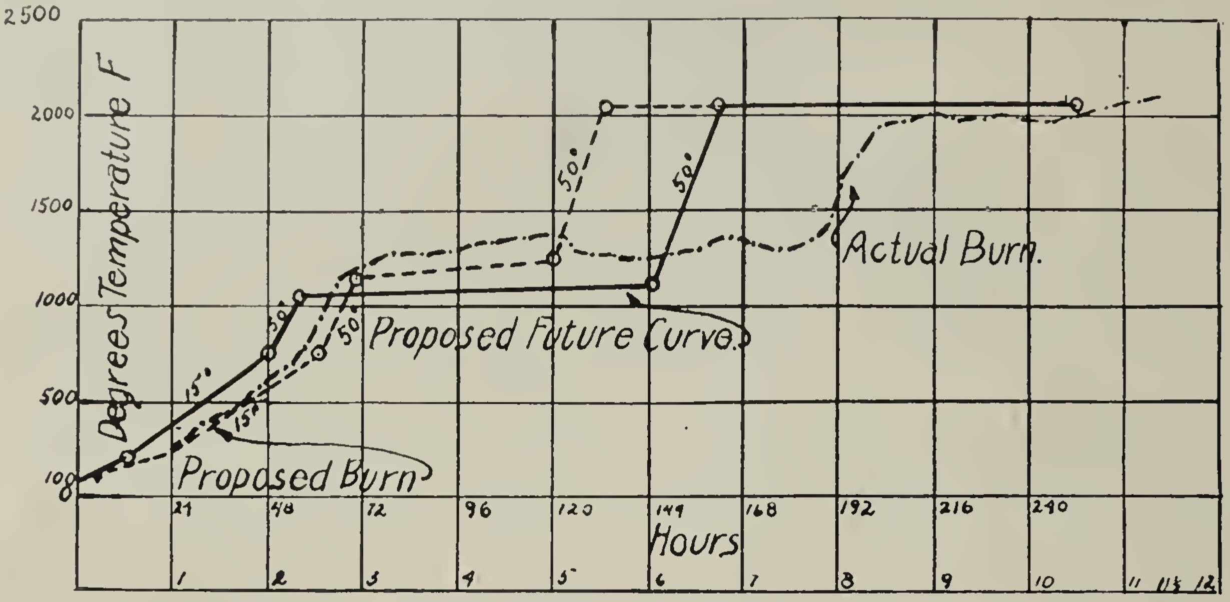
The place where most plants fail to get the maximum good from their pyrometer installations is in determining the proper procedure to follow after having installed the pyrometer in the best manner. The first step should be to plot a curve of the burn as followed before the pyrometer installation. This can be done by following the regular procedure in burning and then recording the temperature on the couple each hour. The time in hours can then be plotted as abscissae (or horizontal measure-

After a Period of Experimentation Wherein the Use of the Draft Gauge and the Orsat Is Co-ordinated, the Condition of the Kiln Atmosphere Can Be Guided By the Draft Gauge Alone.

ments) and the corresponding temperature as ordinates (or vertical measurements) on a sheet of curve paper. To do this several burns should be made and their records kept so that a typical curve may be obtained.

PROCEDURE FOLLOWED TO CUT TIME OF BURN

While the principles involved in the use of the pyrometer apply quite generally to burning all clay ware, the remarks made in this article shall be confined to the burning of brick. We will assume that we have obtained a true record of the average burn in use, and that we desire to shorten the burn to the least possible time. For convenience we will divide our burning into five periods as follows:



The Pyrometer Should Be Used As a Guide to Shorten the Burn, Not Alone As a Check on the Burner. The Best Means to Accomplish This Is to Follow a Predetermined Burning Curve.

1. Incipient watersmoking (from 0 to 200 deg. Fahr.).
2. Continued watersmoking and heat raising (200 to 750 deg. Fahr.).
3. Rapid heat raising (750 to 1,100 deg. Fahr.).
4. Oxidation (1,100 to 1,250 deg. Fahr.).
5. Rapid heat raising (1,250 deg. Fahr. to whatever temperature our plant burning records show as being the highest possible temperature).
6. Vitrification or period of settle.

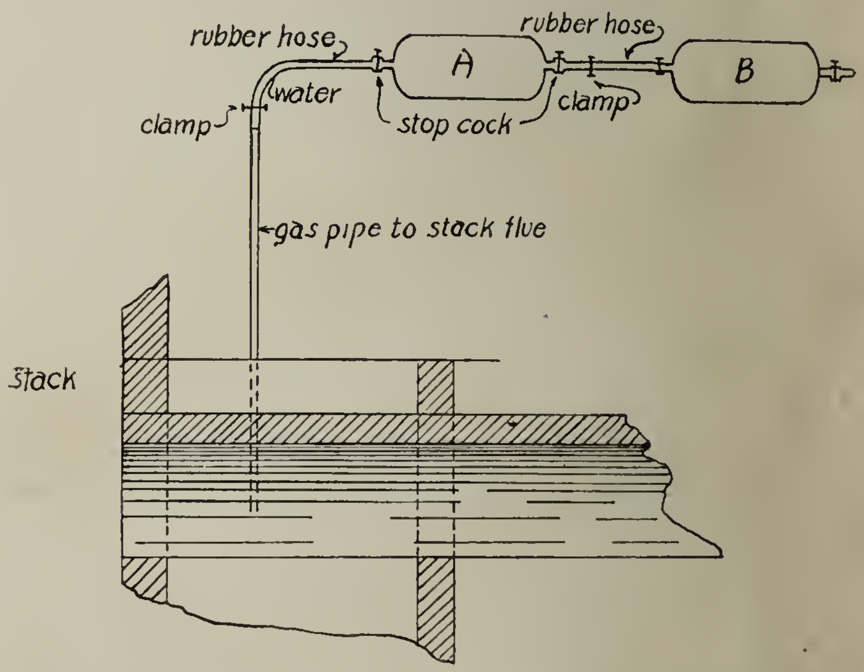
In trying to produce a better or shorter system of burning it is best to try to shorten only one period at a time. Upon examination of our average burning curve, for example, we note that it requires forty-eight hours to cover the first period named above. To experiment we now plot a curve which reaches two hundred degrees in six hours less time, keeping the rest of the burn approximately the same as before. When the burn is finished the ware is examined for any different properties of the ware. Since this is the period of incipient watersmoking, we should look carefully for any spalling or water marking, sometimes called kiln marking. If the brick show no ill effects from the above method of burning, the next curve is plotted so that two hundred degrees Fahr. is reached in six hours less than the previous burn. In doing this, of course, the draft plays an important part, which will be discussed later. By following this procedure, we can cut down this period to its lowest possible time. It might be mentioned, however, that it has been my experience that we cannot cut below twelve hours for the period without getting into trouble.

During the next period, between 200 and 750 deg. Fahr., the temperature may be increased with greater acceleration than is ordinarily allowed. The number of hours actually consumed for this period is calculated from the normal curve and then we shorten the period by six hours as in the above cases. This new curve is then followed as closely as possible in the next burn. In every case, the ware should be closely examined after the burn so that the burner may tell pretty closely just how much the period can be shortened. This period is really a continuation of the watersmoking period or as it is sometimes called, it is the dehydration period. Oxidation rarely occurs as low as this, in fact, I have known of only one case where the oxidation ever occurred before 1,000 deg. Fahr. was reached.

The next period in order is the heat raising period between 750 deg. Fahr. and oxidation. We must first know the best temperature for oxidation of our ware before we can do much with this period. The method of doing this was fully described in my article on page 1028 of the December 4 issue of *Brick and Clay Record.* Draw trials in conjunction with the pyrometer should be used. The heat should be raised quite rapidly to about 900 deg. Fahr. and then a trial drawn and examined. After that the heat should be increased slowly from 900 deg. Fahr. to 1,000 deg. Fahr. and trials drawn and examined for carbon content every six hours. If the carbon oxidizes rapidly, you are assured that this is the proper oxidation temperature. If the carbon is slow in disappearing, the heat should be increased rapidly another fifty or hundred degrees and from then on increased slowly.

POINTS TO WATCH IN SETTING OXIDATION CURVE

Care should be taken not to get the ware too hot before the core has been eliminated, in which event it becomes quite troublesome to oxidize the carbon. The curve marked "actual burn" in the accompanying drawing shows a good example of such a case. We were attempting to have our burn follow the curve marked "proposed burn" and everything proceeded satisfactorily until we struck the oxidation period, which we had placed at 1,150 to 1,250 deg. Fahr. When we drew out our trials



A Sample of the Flue Gas May Be Collected By Means of An Apparatus Similar to That Shown Above.

we found that we had our temperature a little too high and the brick became so hard that the carbon oxidized very slowly. In the case of our plant the time necessary to oxidize the carbon is shown quite plainly on the curve sheet. On the ordinary plant there is rarely any attention paid to this period, yet it is often a rife source of time lost in burning.

After the temperature at which oxidation occurs has been determined, its length of duration is found by the trials. In no case should the heat be raised until the trials are perfectly clear, and a sufficient time elapsed as a factor of safety.

Upon completion of the oxidation period the burn should be pushed rapidly to the highest temperature at which the ware will burn without detriment to its quality. My experience has been that the ware will vitrify the fastest, when it is brought to the maximum temperature it will stand and hold there. The rate of vitrification may then be determined by the settle of the ware which, of course, is the effect of vitrification on the ware. The pyrometer is a great help at this stage, because it makes it possible to attain the highest feasible temperature and to know definitely whether this temperature is being maintained.

Where scaling or blowing is prevalent the pyrometer can be used to very good advantage. This defect usually occurs at temperatures ranging from 200 to 800 deg. Fahr. and it is quite possible, with a little experimental work to determine the exact time necessary for this period of burning to overcome the trouble. This is also true with the oxidation of hollow ware. Where swelling occurs a system of trials should be used in connection with the pyrometer and by following the method already described swelling can be completely eliminated.

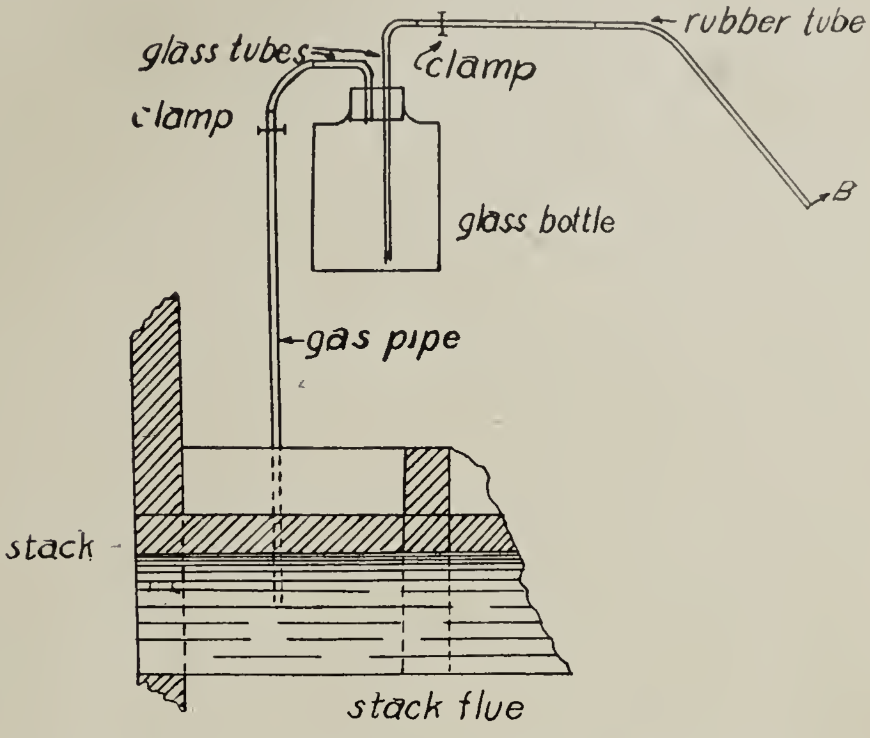
There is one place however, where the pyrometer is not an efficient instrument, and that is in determining the period for the finishing and salt glazing of hollow ware. When this period is reached trials must be relied upon wholly to tell the condition of the ware. I have often found that the temperature during which salt glazing occurred varied 100 and 200 deg. in different burns. I am therefore, of the opinion that the pyrometer should not be used as a guide in an exact temperature requirement of this kind.

USING THE DRAFT GAUGE AND ORSAT APPARATUS

Too much cannot be said about proper draft regulation during burning. It is surprising to see the large number of clay manufacturing plants in operation which do not even have a damper with which to regulate this important factor in the process of burning. Frequently burners use the back draft as a means of checking the draft, but this is usually done in a haphazard sort of fashion.

An opening of about 2 or 4 ft. should be left in the main flue at the stack so as to permit the easy access to a damper and the installation of a draft gauge. A large damper which is heavy enough to resist warping easily, yet not too heavy to be conveniently handled, should also be installed. Guides are generally provided so as to permit the damper to be raised and lowered without being pulled out of its proper position. The damper should be large enough to completely cut off the stack flue in case it is desired to do so. In order to handle the damper with ease it should be provided with a hook and an arrangement should be made on the stack so that the damper can be raised, lowered, or kept suspended at any elevation. There are a number of windlasses on the market which can be obtained and which facilitate the handling of the damper, but it does not require much ingenuity for an ordinary mechanic to construct one of these.

The proper manipulation of the damper is especially essential during the watersmoking period. The draft should be as great as can be obtained. To accomplish this the damper should be completely up and, usually, the fire holes kept wide open so as to permit a steady flow of air thru the kiln. It is not my purpose to discuss stack or kiln construction in this article but I trust that no burner has to contend with kilns in which the draft is deficient either due to poor stacks or improper flue construction. It is always possible to cut the draft when necessary, but nothing can be done with kilns that will not draw.



In the Apparatus for Obtaining a Sample of Flue Gas Shown Above, Water Fills the Tubes and Bottle From A to B. The Water is Siphoned at B Until Apparatus Becomes Filled With Gas, Then Clamps are Tightened at Points Shown.

After the steam has been pretty well expelled, it is wise to start closing the fire holes a little at a time. The damper should still be high, but the air can be systematically cut, thus permitting the temperature to be slowly increased as outlined in the discussion of the pyrometer. The full damper draft still permits of the rapid expulsion of what remaining vapor may be escaping.

During the period of oxidation we must of course require sufficient air or oxygen to oxidize the carbon. We must also increase the temperature gradually until the operation is complete. To do both of the above without wasting too much fuel we should determine just how much excess air we require for our particular clay, to obtain the best results. Excess air is a term used to denote the quantity of air entering the furnace which is in excess of the amount actually required to burn the fuel to complete combustion.

EXCESSIVE AIR REDUCES TEMPERATURE

In actual practice, it requires from 125 to 130 per cent. of air or 25 to 30 per cent. excess air for complete combustion. Any air or oxygen drawn into the kiln in quantities greater than this is carried along with the products of combustion, absorbs calories of heat in being raised to the temperature of the stack gases and is expelled from the kiln with no other accomplishment to its credit than that of having absorbed a considerable quantity of heat and carrying it out of the kiln, causing a waste of fuel.

During the oxidation period a certain quantity of excess air is required to properly eliminate the carbon from the clay, but any air admitted in excess of what is actually necessary to accomplish this end causes a fuel waste and should be eliminated. The amount of excess air necessary during this period should range between 50 and 100 per cent. I have never had occasion to use more than 100 per cent. of excess air and I really believe that in the majority of cases the carbon can be oxidized readily with even a lower quantity.

Since in the heat raising stage it is necessary to increase the temperature quite rapidly the firing must of necessity be quite a bit heavier. Accompanying his heavy firing, the burner usually proceeds to pull his damper wide open, allowing the kiln to have all the draft possible in order to burn the coal more rapidly. In doing this, however, he very often defeats his own ends, and the heavier he fires the more slowly the kiln seems to gain in temperature. This, of course, is due to the fact that he is admitting an immense quantity of air which must be heated along with the products of combustion, thus using much of the heat of the fuel which would otherwise go toward heating up the ware. It is my belief that if the draft is cut and maintained at a point where about 50 per cent. excess air is admitted the fuel will burn well and the kiln temperature will rise rapidly.

The vitrification period requires that the temperature be maintained at its maximum point while the brick are settling. Only sufficient fuel is added to keep the temperature constant so as to allow it to soak to the bottom of the kiln, and only sufficient air should be admitted to have complete combustion. This will not exceed 20 to 25 per cent. excess air. The damper should be kept low since, if the draft be much greater, the heat is generally drawn up the stack away from the bottom of the kiln and the top ware approaches its finishing point while the product at the bottom still remains soft. This is often the cause for unequal burns and for poor kiln heat distribution and the condition can only be remedied by the draft being cut to its lowest possible point, consistent with good combustion. The above is often the cause of poor burns in hollow ware kilns.

Where the material is manufactured from a red burning clay it is necessary that oxidizing conditions be present in the kiln during the finishing period, otherwise the product will take on a gun metal black dirty color due to reduction, and make it unsalable. However, with ware made of fire clay conditions are slightly different. Because of the fact that the trade demands brown pipe it is essential that the burner obtain it in the best manner that he can, and this is by reduction. The air supply is cut down and instead of there being an excess supply there will be a deficiency. The air supply is cut by lowering the damper and causing the kiln atmosphere to become contaminated with unburned fuel gases which attack and reduce or smoke the surface of the ware. This of course, is not good combustion but it is necessary under the conditions.

DETERMINING THE EXCESSIVE AIR

From what has been said it is easily seen that the determination of the excess air is an important step toward efficient fuel consumption and best burning methods. Contrary to the general opinion, it requires but very little skill and knowledge to be able to do this. The instrument most frequently used for this purpose is the Orsat apparatus. It is an instrument which every clay products man should be acquainted with and no attempt will be made here to describe it in detail; an attempt will be made, however, to explain its theory and application and to point out a few advantages gained by using it.

In order to determine what amount of excess air prevails in a kiln atmosphere, it is necessary to be able to analyze the gases of combustion, and this is what the Orsat apparatus is designed to do. This may sound like a very formidable undertaking but it requires but a small amount of practice to become quite skillful in the use of this instrument.

The first step in the use of the Orsat apparatus is to obtain a sample of the gas and to obtain a fair average of the air actually present in the kiln atmosphere. It is necessary to obtain a fair sample of the air actually circulating in the kiln, to take a sample immediately after a fire is applied, and another immediately before the next fire is applied. The average analysis of these two samples gives a fair estimate of the quantity and kind of gases in the kiln during the firing period. The gases should be drawn from a point as close to the stack as possible, preferably at the back draft opening. A small gas pipe is inserted into the stack flue at this point. An appartus consisting of two tanks of about one quart capacity each, connected together by a piece of rubber hose as shown in an accompanying diagram are filled with water so that one is completely full while the other is about half full, receives the sample drawn. A rubber hose connecting with the tank which is completely filled with water is connected with the gas pipe. The water should extend from the gas pipe completely filling the rubber hose connection, tank marked "A", the rubber hose connecting tank "A" and "B" and filling tank "B" to a point so that no air can possibly be present in the line. We now allow the water in tank "B" to escape and thus siphon gas from the stack flue thru the pipe and into the tank "A". When this tank has become completely emptied of its water contents and tank "B" completely filled with water, the water cocks can be closed and in this way we can be certain that tank "A" will contain an undiluted sample of flue gas.

There are a number of simple arrangements which can be used for drawing the sample into a receptacle. One of these is shown in another illustration where only one glass bottle is used but the principle used to fill it with gas is the same as in the above case.

The principle upon which the Orsat apparatus operates when analyzing flue gases is as follows: Some chemicals have the property of absorbing a certain gas and forming a new compound with it. For instance, if a mixture of oxygen and carbon dioxide gases are passed into a vessel containing potassium hydroxide the latter substance will absorb all of the CO_2 and form a new compound called potassium carbonate. By measuring the volume before the gases are in contact with the potassium hydroxide and afterward, the amount of CO_2 gas present can be ascertained, since it is equal to the difference in volume.

Other liquids absorb other gases and since we know what gases are always present in flue gas, by taking those chemicals which absorb the different gases we are able to obtain a volumetric analysis of each gas present in the flue gas. The Orsat apparatus consists of three chemicals, each one absorbing one specific gas. By passing the flue gas consecutively thru the three different chemicals, and noting the difference in volume before and after, in each instance, an analysis is obtained of the amount of carbon dioxide, carbon monoxide, oxygen, and nitrogen (by difference) in the sample.

EXAMPLES OF GAS DETERMINATIONS

After the sample of gas is obtained it is analyzed by means of the Orsat apparatus. This determines the quantity of oxygen, nitrogen, carbon monoxide, and carbon dioxide present in the gas. As said before this operation is very simple and can be easily done by following the directions given by the manufacturers supplying the instrument. From the results obtained the amount of excess air can be figured by using the following simple formulae.

If no carbon monoxide is present in the kiln gases as will be the case if perfect combustion takes place then the formula to use is

$$\frac{\text{Nitrogen found in flue gas} \times 100}{\text{Nitrogen found in flue gas} - 3.76 \times \text{Oxygen}} = \text{per cent air.}$$

Substract 100 from this and you get the amount of excess air used. To illustrate the use of this formula suppose our sample of gas analyzes as follows:

Carbon dioxide	16.3 per cent.
Oxygen	10.0 per cent.
Nitrogen	73.7 per cent.
	100.0 per cent.

Substituting these values in the formula we get

$$\frac{100 \times 73.7}{73.7 - (3.76 \times 10)} = 204 \text{ per cent. of air or 104 per cent.}$$

excess air.

If we have carbon monoxide present in the sample, it is necessary to divide the per cent. of carbon monoxide by two and used this negatively in place of the oxygen in the formula. For example let us assume that the gases analyzed as follows:

Carbon dioxide	14.1 per cent.
Carbon monoxide	8.0 per cent.
Nitrogen	77.9 per cent.
	100.0 per cent.

Carbon monoxide equals 8, divided by 2 equals 4. Placing the negative sign before the 4 and using it in place of oxygen in the formula shown above we have

$$\frac{100 \times 77.9}{77.9 - (3.76 \times -4)} = 84 \text{ per cent. air.}$$

This means that the kiln gases are short 16 per cent. of what air is actually necessary for the complete combustion of the fuel used.

If both carbon monoxide and oxygen are found present in the sample of the flue gases, we must proceed as follows:

Carbon dioxide	14.3 per cent.
Carbon monoxide	4.1 per cent.
Nitrogen	81.4 per cent.
Oxygen	.2 per cent.
	100.0 per cent.

Dividing the amount of carbon monoxide by two, we have 2.05 per cent. This is made negative and is thus subtracted from the per cent. of oxygen. Hence, we have $.2 - 2.05 = -1.85$ per cent. Now using this figure in the formula for the oxygen, we have

$$\frac{100 \times 81.4}{81.4 - (3.76 \times -1.85)} = 93 \text{ per cent. of air.}$$

This means that the gases contained seven per cent. less air than was required for complete combustion.

To regulate and control the correct amount of air entering the kiln the draft gauge should be used as a guide. It would be impractical to keep analyzing the flue gases continually during each burn and the draft gauge eliminates this necessity. To show why this is true we will suppose that we have been determining the air excess necessary for best oxidizing conditions. We have taken a number of samples of flue gases and analyzed them to find the amount of excess air used and have been dropping the damper after each sample was taken and analyzed, until the gas analysis showed about 200 per cent. air or about 100 per cent. excess air. If we find that these conditions give us the best results we use the draft gauge and measure the draft at the same locality where the samples of gas were taken. The draft should really be measured at the same time that each gas sample is taken. By doing this we would have a complete record of the per cent. of excess air for each draft measurement.

Also, by having this data at hand, it is unnecessary to obtain any further gas analysis for this particular period during future burns, for all that is necessary for the burner to do is to adjust his damper so that the draft reading recorded on the gauge is the same as had been registered when the proper excess air was obtained in the experimental burn. Since atmospheric conditions cause the draft to vary from time to time, it is essential that the burner take a reading at intervals of from one to two hours. In this way he insures himself against any error and thus can keep his excess air at the desirable quantity with reasonable accuracy.

The same procedure as described above should be followed for all the other periods of the burn and after a complete record has been obtained of the draft pressures needed for the correct amount of air, the draft gauge will be all that is necessary to duplicate air conditions from burn to burn. In closing I might state that there are a number of good makes of draft gauges on the market but best results are obtained if the same type of gauge is used continually.

* * *

Massachusetts Association to Meet in March

The Massachusetts Brick Manufacturers Association, of which George A. Parry, of Boston, is president, Russell A. Bailey, of Springfield, vice-president, and Sidney H. Francis, of Fitchburg, secretary and treasurer, will hold its annual meeting and election of officers in March, at Worcester, Mass. The meetings will be held at Hotel Bancroft. Among the several important subjects to be discussed will be the question of taking steps to secure the 1919 annual convention of the national association for this state.

This matter already has been brought to the attention of the association thru Vice-President Bailey who is anxious that the convention shall be held in Springfield. The convention bureau of the Springfield Chamber of Commerce is making strenuous efforts along the same lines and Charles W. Winslow, secretary of the bureau, is hopeful that they may be successful.

* * *

The annual meeting of the Cincinnati (Ohio) Brick Club of the Chamber of Commerce, will be held on Friday evening, January 18, at the Hotel Gibson.

New England Ceramic Society Section Formed

The New England Section of the American Ceramic Society was organized on December 14, 1917, at Worcester, Mass. A special meeting, with that sole purpose in view, was held at the Norton Co.'s plant in the administration building. The attendance consisted of a strong representation from the Norton Co. and other New England manufacturers.

Ross C. Purdy spoke on the "Influence of Scientific and Technical Societies on the Development of Men and Industry." A resolution to strengthen and extend the work and influence of the American Ceramic Society in the New England Section, which includes the Albany (N. Y.) district, was considered and the following officers were elected:

Chairman, A. A. Klein, the Norton Co., Worcester.

Secretary, C. L. Walduck, Grueby Faience & Tile Co., Boston.

Councilor, C. H. Kerr, American Optical Co., Southbridge.

A program committee was appointed to arrange for the next meeting, which will probably be held in Boston.

Adjournment was in order and a trip thru the Norton plant followed.

A dinner was arranged for at 6:00 p. m. at the State Mutual Building restaurant and ended with short talks from all those present. The meeting certainly proved to be a most successful way to broaden the scope of the societies' activities and increase the membership.

A Knotty Problem for Ceramists

The following question has been received from one of our subscribers: "How many feet of 1¼ in. pipe or how many feet of one inch pipe will be required to furnish heat in a brick dryer 101 ft. long, 5 ft. high, and 3.7 ft. wide, at a temperature of from 175 to 200 degrees, with a steam pressure of eight pounds."

Brick and Clay Record would be glad to receive an answer to the above question from some of our prominent ceramists. See question on page 156.

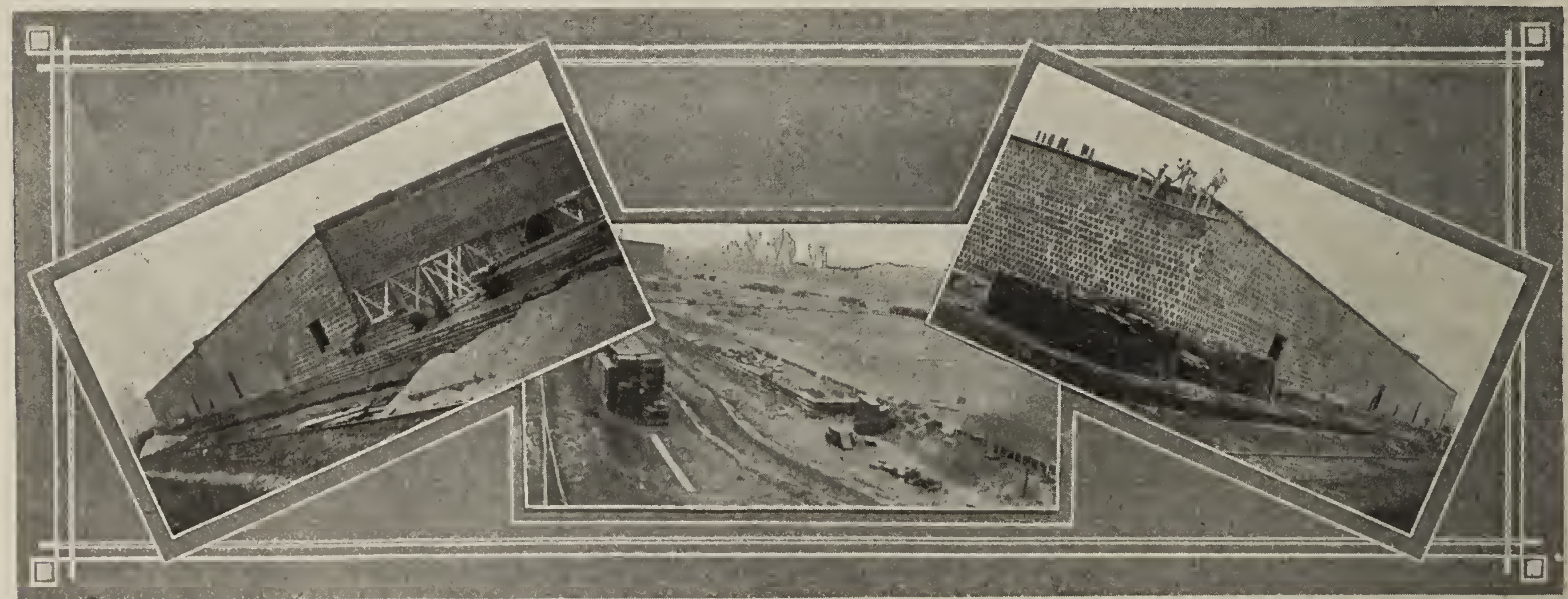
U. S. BUILDS *with* HOLLOW TILE

HOLLOW BUILDING TILE, fireproof and permanent, is the material chosen by Uncle Sam to build his immense hay warehouse now going up at Kansas City, Mo. Kansas City's position as the largest hay market of the world brought to it the huge warehouse for storing surplus alfalfa hay of the great alfalfa districts of Kansas, Nebraska, and Missouri. The big structure, which was started about five weeks ago would have been finished two weeks ago had not deliveries of lumber been held up, so fast is the government rushing the completion of the structure to store the hay for the thousands of army mules and horses used by America and its Allies. The big warehouse is 912 feet long, 96 feet wide, and 22 feet high.

The cost of construction amounts to over $75,000. The structure is being built by the Belfast Investment Co., and the material is being supplied by the W. S. Dickey Clay Manufacturing Co. The warehouse lies along the railroad tracks in the East Bottoms, close to the Dickey company's plant. When the government engineers designed the warehouse they chose hollow building tile as the best fire proof building material. The structure is fireproof thruout with firewall partitions, also of tile two hundred feet apart. The warehouse will have a capacity of more than ten thousand tons of baled hay. A huge press is being installed at a cost of more than fifty thousand dollars which will press three bales of hay into the size of one ordinary bale.

The plant of Walter S. Dickey Clay Manufacturing Co. is being given over entirely to supply the hollow, glazed vitrified building tile for the warehouse, and the right of way for freight shipments has been secured for the purpose of rushing the delivery of the tile. More than one hundred and forty cars of building tile will be required to complete the structure, which will also have a huge loading dock built of the same material. A retaining wall running almost the entire length of the warehouse, is also being erected of tile.

Most of the tile being used in the construction of the plant is of the standard 5x8x12 series, altho large quantities of the standard 4x5x12 series is also being used and the firewall partitions are being erected of 3x12x12 and 4x12x12 partition tile.



Three Views of the Immense Government Hollow Tile Warehouse Being Erected at Kansas City, Mo.

ORIGIN *and* PROPERTIES *of* CERAMIC FUELS

The Second of a Series of Articles Upon Fuel Topics Which Tells of the Mode of Formation and Properties of Various Fuels—It Presents Information Essential to a Complete Understanding of that Which Is to Follow

By J. F. Kohout

Director of the Laboratory, Commercial Testing and Engineering Company, Chicago

NEARLY EVERY TYPE of fuel is adaptable for use in the clay products industry. The kind of fuel utilized at any certain plant nearly always depends upon its cost. The purpose of this article is to tell the manner in which some of the common fuels have been formed and their properties in burning.

Coal is of vegetable origin; this is shown by the fossilized remains of plants found in coal beds. Back, millions of years, during what is known as the carboniferous age, plants of all kinds, and especially ferns, grew to enormous sizes. These plants, when they died, or were overthrown from any cause, fell into bodies of water, which at that time were very numerous over the earth. The cellular substance became waterlogged and sank to the bottom. This prevented decay of the wood. Layers of sand and earthy matter were deposited over the vegetable material and then gradually a new layer of plant remains, etc., was laid down similarly. This was how the coal measures were laid down, and shows how the successive layers formed the present different seams, or veins, of coal. The earthy matter overlaying the vegetable gradually increased in quality, thus increasing the pressure on the latter; this pressure combined with the heat from the earth, produced the metamorphosis, or change, in the plant material to its present form of coal. The different types of coal are due probably to differences in the chemical structure of the plants forming them, or to the longer, or shorter time the coals were subjected to the action of the heat, or pressure, or to all three agencies.

FUEL ADMINISTRATION COMMENDS COMBUSTION ARTICLES

It is highly gratifying to receive such encouraging support as has come to "Brick and Clay Record" in the publication of the series of combustion articles, which, it is hoped, will bring about a marked reduction in coal consumption by teaching the methods of using that commodity most effectively. Commenting upon this series, of which this article is the second to appear, the Fuel Administration extends to us its thanks for our "very cordial and patriotic co-operation * * * in endeavoring to conserve the country's supply of coal."

Oil is probably the result of anaerobic decomposition of the remains of sea animals. The bodies of these creatures remained covered with water so that decay in the ordinary sense did not occur. The oil resulting from this action collected under layers of impervious shale, or rock, being trapped under those formations of the earth's structure known geologically as "antichives" or upward folds of strata. Another theory for the formation of oil deals with the action of water on metallic carbides. It is a well known fact that acetylene is produced by the action of water on calcium carbide. Acetylene is a hydrocarbon which may be polymerized to form higher compounds of carbon and hydrogen. It may be that conditions existing at the time oil was formed favored some such combination as this. It is impossible in an article of this length and nature, however, to go into any extended discussion of this matter. Nevertheless, it may be stated that the evidence supported by either theory is not sufficiently incontrovertible to lead to the exclusion of the other.

Natural gas, or marsh gas, or methane, is formed in nature by the decomposition of vegetable matter which did not come in contact with air. It was collected over water and under impervious rock. From the mode of formation it is not surprising that gas frequently occurs in connection with coal and oil.

PROPERTIES OF VARIOUS FUELS

Almost any fuel is suitable for some form of ceramic heating. In point of heat value, or British thermal units per pound, oil stands at the head of the list. In round numbers fuel oil will average 19,500 B.t.u. per pound. It burns with an extremely hot flame, but this may be regulated to almost any desired intensity. The length of the flame may also be controlled and adjusted as may be necessary. It is, of course, ashless and very easily handled, being piped where needed and burned from an atomizer spray with either compound air, or steam. It is readily available in some parts of the country, but its high cost limits its use to those operations where it cannot easily be replaced by a cheaper fuel.

Natural gas is a very good fuel for the same type of work that calls for the use of oil. It is burned and handled in about the same way, but is of lower heating value, running about 1,100 B. t. u. per cubic foot. In the gas fields where it is produced it may be obtained cheaply, and should give good satisfaction in ceramic work.

Producer gas has the same advantages that are possessed by natural gas except that its heating value is only about one-fifth as great, about 185 to 200 B. t. u. per cubic foot. This makes it necessary to burn about five times as much producer gas as natural gas to do the same work. This, however, is not enough to condemn the use of producer gas as a fuel for a large ceramic plant may find it advantageous to install gas producers. Once the producers are installed the gas may be made very cheaply. Since coal, or coke, is used in the producer, and as these materials are readily obtainable anywhere, there is no territorial limitation to be considered.

Powdered coal is really the most efficient way of burning coal. The calorific power is practically all available and the coal burns like oil or gas. The flame is adjustable both as to length and intensity within very wide limits. Of course, there is ash to be disposed of which is a disadvantage, tho with powdered coal the ash generally is in the form of a slag which is easily handled. The chief arguments against powdered coal is the cost of installing drying and pulverizing machinery to prepare it for the burners, and the burners themselves. Also, for clay products, the ashes would tend to give a poor appearance to the ware.

Lignite, or sub-bituminous, coal is a very cheap fuel in the western part of the country, but it is hardly suitable for use as a ceramic fuel. It has a very high moisture content, about 20 per cent. when mined, and slakes badly soon after mining, crumbling to pieces or powder. This property makes it hard to handle in transportation, and it could only be used in the locality where it is produced. It has a very low heat value, about 8,000 to 9,000 B. t. u. per pound, so that it must be obtained at a very low cost, since a large tonnage of it must be burned to do the same work that a good grade of coal would do.

COKE GOOD FOR LOCALIZED HEAT

Coke is a good fuel within its limitations. It is fairly expensive, but gives a high temperature to a kiln or muffle placed close to, or into a bed of it. It is flameless so that it finds its best application in small kilns or furnaces.

Coal is generally available thruout the country. The semi-bituminous coals of the East are the hottest burning of all, but at the present time are practically not obtainable. The bituminous coals of the middle Western field are plentiful and some are of very good quality. They are rather fast burning, and, since they are rather high in volatile matter burn with a long flame, the length of the flame also depends to some extent upon the mechanical operation and method of firing the furnace. The ash content is generally rather high in the smaller sizes, and the ash itself is often fusible at relatively low temperature so unless care is used in firing there may be considerable trouble from clinkers.

These coals are lower in heat value than the Eastern coal, but are nevertheless very satisfactory. They are much cheaper also, and it is generally true that with care in firing they will give nearly as good results as the more expensive coal.

The following table gives comparative figures showing the amount of heat purchased in the form of various fuels. One million British thermal units is used as a common measure. The price per million B. t. u. is obtaned by the formula

$$\text{formula } \frac{a \times b}{\text{price} \times 1,000,000} = \text{price per million B. t. u.}$$

a = B. t. u. in unit quantity (1 lb., 1 cu. ft., etc.)
b = number of units (1 ton, 1,000 cu. ft., etc.)
price = cost of b (price per ton, etc., expressed in cents).

FUEL	B. T. U. PER UNIT	PRICE F. O. B. MINE	PRICE PER MILLION B. T. U. IN CENTS AND MILLS
Franklin County, Illinois	11,895 lbs.	$2.40 a ton	10.1
No. 4 Coal, Indiana	11,372 lbs.	$2.40 a ton	10.6
Hocking Ohio	11,875 lbs.	$2.45 a ton	10.4
Youghiogheny, Pennsylvania	13,720 lbs.	$2.45 a ton	8.9
Pocahontas, West Virginia	14,553 lbs.	$2.00 a ton	6.9
Fuel Oil	19,500 lbs.	$0.0103 a lb	53.3
Natural Gas	1,100 cu. ft	$0.10 per 1,000 cu. ft	9.1

The coal prices are the prices fixed by the government for mine run coal at the mine as they existed on January 9, 1918. They do not include freight rates from the mine to the point of consumption. To obtain the figures for any particular plant the freight rate must be added to the mine price per ton, and that value used as the price in the formula. The price of oil is that quoted by the Standard Oil Co. for fuel oil in lots of more than ten barrels on the same date in Chicago. The price of natural gas is the mean of several prices existing in the gas fields. It is seen that fuel oil is by far the most expensive fuel to use.

Figures for producer gas and lignite were not included because of the difficulty experienced in obtaining accurate data for calculation.

* * *

Louisiana Clays Subject of New Bulletin

The clays of Louisiana have not received a great deal of attention for two reasons. As the principal industry of Louisiana is agriculture, the demand for clay products within the state has not been great; furthermore, most of the local needs for structural material have been supplied by its large and valuable timber resources. Some structural materials have been manufactured from clay in the vicinity of some of the larger cities, but Louisiana in 1915 produced a little less than 0.25 per cent (in value) of the total clay products of the United States.

In a paper entitled "Louisiana Clays," by George C. Matson, just issued as Bulletin 660-E of the United States Geological Survey, clays obtained in each of the principal geologic formations of the state are described, and the results of tests made by the Bureau of Standards are given.

ROUGH TEXTURED TERRA COTTA *a* NEW BURNED CLAY MATERIAL

A NEW DEPARTURE in the manufacture of architectural terra cotta has been made by O. W. Ketcham, of Philadelphia, Pa., who has recently placed upon the market a rough texture terra cotta, especially for use in connection with rough texture face brick. The company responsible for the birth of this new material is modest in its claim for credit for originality and states that while the idea originated with it, it was a natural outcrop of the expressed desire of many architects for a product of this nature.

The process of manufacture is essentially the same as that employed in making regular terra cotta, a slight difference in surface treatment only being required to give the material a texture corresponding to that of the brick with which it is to be used.

The company has already started to exploit its product among the architects of the country by full page advertisements in architectural journals, in order to strengthen the foundations upon which the future sales of this material will be based. The company is preparing a very elaborate set of plates showing this new line of terra cotta used in conjunction with their various types of rough texture brick. When completed these plates will afford the architect a means of reference—complete and perfectly accurate in every detail, so accurate, in fact, that he can specify his textures and colors directly from them. The advantages of such a course are numerous and apparent. It will relieve the architect from the necessity of handling a cumbersome and often highly incomprehensive collection of samples, which in many cases become broken, lost or discarded on account of size and weight. In the case of the plate collection to be published by O. W. Ketcham, however, a better and more complete representation of its material will be made and one which will be permanent, since it will be possible for the architect to file away the plates for reference at any time.

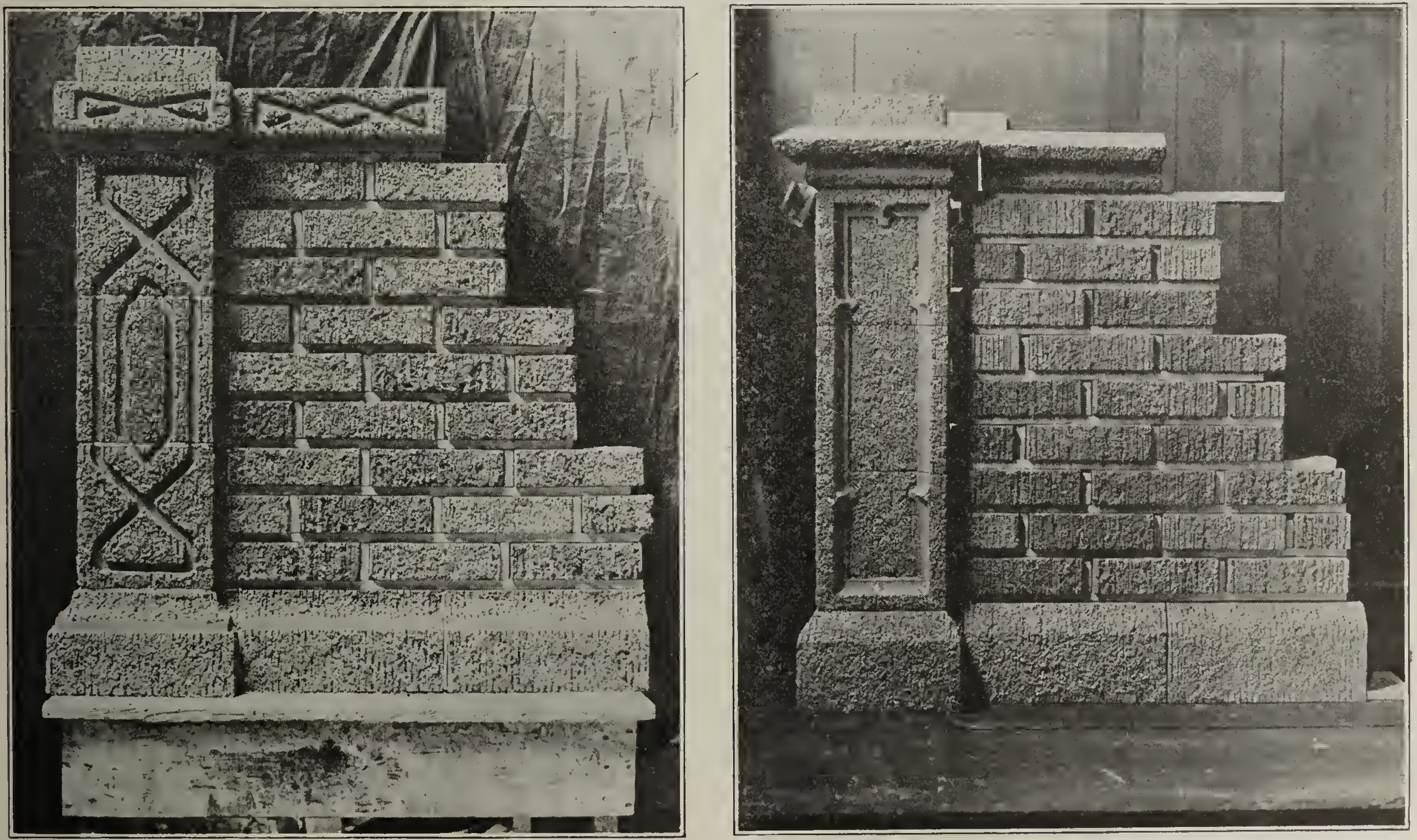
In writing about this new product Mr. Ketcham states: "We decided to take up the manufacture of this material as we felt, owing to the large demands for rough textured brick, it would be interesting to have the terra cotta to harmonize. The architects have become very much interested and undoubtedly there will be a demand for this material right along. This material of course is just the same as the regular terra cotta which has been made for years with the exception that it is a new treatment of the surface finish. It is our endeavor and intention to duplicate the finish in any rough textured or smooth surface brick the architect may desire to use."

The accompanying two photographs clearly show how the combination or rough textured brick and terra cotta is employed and gives some idea of the effects possible.

O. W. Ketcham, in the origination of this new burned clay material, has no doubt struck a responsive chord in the demand for architectural material and has placed upon the market a product which is, we believe, destined to gain wide

* * *

The Kutztown (Pa.) Brick Co., of which John H. Bieber is manager, is establishing a new record by working right on during zero weather. The output during last year amounted to over one and one-half million brick.



Two Examples of How the New Rough Textured Terra Cotta Will Be Used to Carry Out Harmonious Combinations With Brick of Any Texture or Color.

HOLLOW TILE *as a* FACTOR *in* FIRE PREVENTION

A Great Future Is Predicted for Burned Clay Hollow Tile and Its Development to the Present Time Interestingly Traced in this Article, Reprinted from the Bulletin of the National Fire Protective Association

By Walter A. Hull

THE DEVELOPMENT of the American skyscraper ushered in the era of fire-resistive construction. Steel frame construction did away with the existing limits to the height of buildings, solving some of the building problems of the times and creating new ones. The new heights in themselves introduced difficulties not hitherto thought of; there was a limit above which firemen could not fight fires effectively with hose streams, danger to human occupants was alarmingly increased and the tremendous investments in these monstrous buildings were seen to be undesirable risks from the insurance standpoint. There was one logical, inevitable answer to these difficulties: if buildings were to be built many stories higher than the old brick and timber structures, combustible material must enter as little as possible into their construction.

The old standby as a non-burnable building material was burned clay in the form of brick. Nothing better being available, brick was used, for walls, partitions and even for floor arches, in some of the early skeleton construction buildings. Of course, the objection to the extensive use of brick in this way was the excessive dead load that had to be provided for in the steel work of the building. The obvious remedy was to make burned clay building units hollow instead of solid. There were at that time sewer pipe factories that made some hollow building blocks for foundation walls of dwellings and other small buildings. It was but a short step from these blocks to the partition tile and the first hollow floor arch blocks of burned clay.

Without the skyscraper the development of the hollow tile industry would have been slow and insignificant. Nothing better than burned clay in the form of brick being avail- construction building would unquestionably have been greatly retarded. The development of these two giants, the skyscraper and the hollow tile industry, has wielded an influence in the progress of our attainments in fire-resistive construction which can hardly be overestimated. The tall building, introducing, as it did, new hazards and new problems in building to prevent as well as to withstand fire, stimulated activity in the direction of better design. The necessity brought forth vigorous and effective endeavor. Hollow tile contributed, to a most important extent, to the new order of things, not only by making the relatively quick success of the tall building possible, but also by providing an effective medium, at moderate cost, for fire-resistive construction in other types of buildings as well.

The early days of the skyscraper were trying times for hollow tile. Buildings of the new type were scattered here and there among older, burnable buildings, and the exposures were severe in the extreme. The aggregate amount of interior fuel in the form of floors, doors, trim, etc., was enormous. Unprotected window and door openings were the rule, and in those fires which reached the proportions of conflagrations, everything combustible both within and without the so-called fireproof buildings was consumed. Those were terrific tests. The saying became current that "fireproof buildings were not fireproof"; yet to the fair-minded observer the marvel was not so much that these buildings were damaged in such conflagration conditions as that they survived at all. Instead of condemning them, the building profession set about to eliminate the weak points of the earlier forms of construction and to better safe guard against hazards within as well as exposures without. Shutters, wired glass windows, enclosures of vertical openings and the dividing of large floor areas, together with the introduction of sprinklers and the elimination of most of the combustible structural features, gave better protection to buildings and contents.

In much of this improvement hollow tile played an important part, for the very availability of hollow tile for the purpose encouraged the extensive introduction of such forms of protection as partitions and stairway and elevator enclosures, which are of the utmost importance in safeguarding both property and human lives. The effectiveness of adequate fire stops consistently arranged, has come to be realized in very recent years as never before. The universal adoption of adequate systems of fire stops in large buildings would mean the passing for all time of the large, high-value fire. Confined to small space, no fire, except in explosives, can get beyond control, whereas, as has been demonstrated time and again and in most costly fashion, the fire which finds no effective structural barriers in its path is only too likely to become a raging, racing monster which no human agency can hope to cope with. All those materials and forms of construction which lend themselves effectively and economically to service as fire barriers deserved recognition as important factors in the elimination of fire waste, but it must be remembered that in the earlier development of extensive fire-stop systems, hollow tile was the pioneer, and that without this structural medium the progress of fire control must have been seriously retarded.

Fire-resistive construction, beginning with the sky-scraper, was extended over a wider field, including factory buildings, warehouses and apartment houses. The importance of the part played in this progress by hollow tile may be gauged from the following extracts from a report made as late as 1903 by Rudolph P. Miller, then Engineer of the Bureau of Buildings of the City of New York:

"Nine tests were made to compare the fire-resisting quality of different materials with that of a 2-inch terra cotta block. . .. .. The Superintendent of Buildings has the power to define what constitutes fireproof material. Terra cotta has been accepted as such ever since the introduction of fireproof construction, and therefore was accepted in these tests as a basis of comparison."

WIDELY USED FOR COUNTRY HOME BUILDING

Yet it is not only in the cities that terra cotta has gained recognition as the standard fire-resistive material; one of the significant features of the increase of wealth and the growth of better standards of living in this country is the development of the modern country house. High class dwellings, remote from city fire departments, make special demands on structural materials. These buildings are not temporary affairs, to be torn down, after a few decades, to make room for the advancement of a growing city. On the contrary, the conditions are here favorable to the erection of buildings that will endure, without depreciation, for many generations. In such dwellings it is worth while to provide exterior walls that will be proof against dampness and will effectually keep out the cold blasts of winter and the excessive heat of summer. In order to endure for long, and to justify the substantial investment which such a house must represent, it must be as safe as possible against fire. Finally, it must be architecturally beautiful. Here again hollow tile supplies the needed material to fulfill the requirements, contributing in no small way to this phase of our national development.

But it is not alone in the homes of the wealthy that this material contributes to our rural improvement. The practical farmer purchases hollow tile for the construction of his silo and the sanitary dairy barn. Appreciating the importance of permanence, of fire safety, and of the comfort and health of his live stock, he builds in the same substantial but economical manner his other farm buildings, including the humble pig pen and the poultry house. So adaptable is this building medium, and so capable of specialization, that farmers are now using well ventilated rat and mouse-proof hollow tile corn cribs for the storage of the corn crop.

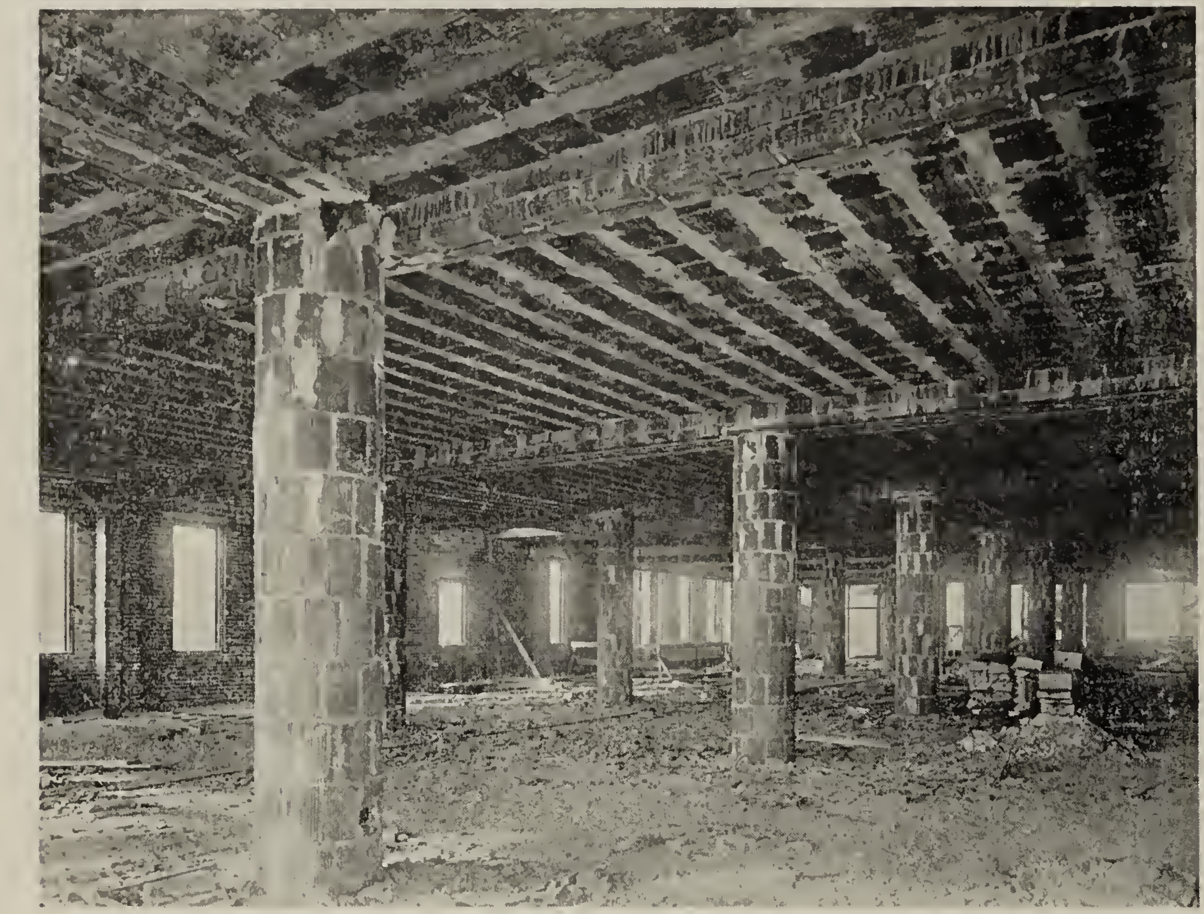
Wholesale Use of Facing Hollow Tile in An Economical Type of Dwelling

ADAPTED FOR INDUSTRIAL RESIDENCE BUILDING

Another field of usefulness, and one which bids fair to develop large proportions in the next few years, is that of the individual dwelling of moderate and even of low cost. Year by year the appreciation of permanence and of low maintenance expense is increasing, and the difference in cost between burnable and non-burnable construction is narrowing down, so that it is gradually coming to be recognized that the wall of hollow tile is a good investment and its use in dwellings is steadily coming into favor in spite of the slowness with which building regulations and insurance ratings adjust to changing conditions. Perhaps a new impetus will be given to this tendency, which is highly desirable from the fire protection standpoint, by the introduction of presentable facing tiles. The old hollow tile wall had to be covered up with something else to make it presentable.

Rather tardily, it seems, but perhaps as soon as building conditions would justify it, the tile manufacturer has now brought forth what seems the obvious thing in the shape of facing blocks of hollow tile. In point of color and texture there is no difference, and no reason why there should be any difference, between the effects producible in clay tile and those that are so well known and so much admired in clay brick. The material and the process of manufacture are similar. In the matter of size the tile unit is different from the brick unit because a larger size is more economical and convenient for hollow tile manufacture and erection. How well this new departure is going to appeal to the architect and to the more or less discerning building public remains to be seen. We are used to the brick house, in which the facing unit presents to the eye a surface about eight inches long and two and a half inches wide. The tile house, with the facing unit twelve inches by five, will present a new and, of course, in the beginning, a strange appearance; yet there seems to be no reason to believe that such a unit will not lend itself, in the hands of the architect, to the production of pleasing effects in his general scheme, as well as the smaller unit. Brick have been made about eight by two and a half, some of them twelve by two and a half inches, or a little thicker, since the beginning of civilization, or thereabouts, simply because such sizes were practical, convenient, economical sizes in which to make brick. The architect takes them as he finds them and accomplishes much with them. Influenced by other features in hollow tile, he will undoubtedly take up this new medium, possibly with some hesitation, and obtain from it architectural beauty which may be as gratifying as those he has been producing with the other mediums at his hand. Should this be the case, the opportunity for hollow tile to render service in the dwelling house field will be broadened, and we may expect this building medium to meet the needs here as it has already done in other types of fire-resistive buildings.

Considering the breadth of the field covered by hollow tile and the decades of service that it has rendered, it is rather



Hollow Tile in Steel Frame Construction, Showing Column and Girder Coverings and Floor Arches

remarkable how little is definitely known about those fundamental physical qualities which determine its usefulness and particularly its fire-resistive properties. In very recent years there has been some activity along the line of determining the strength of tile blocks and of tile walls, and the results of these tests are gratifying in that they indicate that this class of material has structural possibilities that are capable of further development. On some of the important features of its fire-resistive qualities very little definite information is available. Altho it has been performing faithful service in fire protection for decades, this material is subject to criticism because of those cases in which hollow tile partitions and other parts of buildings subjected to severe fire, or fire and water treatment, have been damaged, more or less seriously, entailing the necessity of subsequent repairs. It may be that the extent of such damages and the importance of this tendency have been exaggerated. It is natural that this should be the case for the reason that every injury to hollow tile is plainly visible. Either it is injured or it is not, and if it is, the damage is always exposed where it will show.

Furthermore, a rather unimportant damage, structurally, may show up so obviously and spectacularly as to leave a lasting impression on those who walk thru the burned building, making casual observations rather than a technical study. While this may work to the disadvantage of hollow tile in the effect on the mind of the building public, there is, after all, a good side to this very obviousness, for it may be said, in fairness to hollow tile, that it is more honest than some materials because it does not sustain injury by fire without showing the extent of that injury. In appraisal, or in repair, there is very little room for doubt in the case of hollow tile.

FURTHER INVESTIGATION DESIRABLE

Unfortunately, no building material that has so far come into use is indestructible or immune to injury from fire and water, and when the backers of one material point to the weakness of another, it is a case of the pot calling the kettle black. One material may be better than another for certain purposes and in certain respects, but there is no one material superior to all others for all purposes nor in every respect. We find many things in favor of hollow tile. We find one thing against it, in its tendency to crack, so that the outer web will break off in some cases of exposure to fire, or fire and water. Such troubles may be expected to decrease with the improvement in our fire prevention construction, for the high-pressure hose stream, in particularly, is gradually being eliminated from the fire protection scheme, so far as high class buildings are concerned.

However, it is not the right attitude to assume that even moderate losses from this cause are inevitable. We Americans are not fatalists. Neither is it right for the friends of hollow tile to assume an attitude of complacency because of the fact that no other material is free from weak points. We are coming to realize, as never before, that we cannot afford preventable losses. Hollow tile is in extensive use, and it is going to continue in extensive use. It is not a matter of importance to have an answer to the one simple question: Are the fire losses due to the breaking of hollow tile preventable? It is safe to say that no answer will be immediately forthcoming. There is no answer in our literature and none to be deducted from the information to be gleaned therefrom. The published accounts of fires either may be distorted, according to the zeal of the writer, for or against the material, or descriptions may not be sufficiently definite or complete to convey the essential facts from which to draw conclusions. The reports of the limited number of fire tests that have been made are insufficient, and it seems evident that further investigation along this line is both necessary and promising.

We know that clay is not a definite mineral and that the various clays and shales from which hollow tile is made in various districts, and even in the same district, differ widely from each other in their physical characteristics. The burned products from some clays are more easily cracked by quick heating than those from other clays, and the same is true, to some extent, of different products from the same clay. It has been found that with some materials even a very slight difference in the process of manufacture may make a surprisingly great difference in the nature of the product in this respect. It has been a matter of frequent observation that porous hollow tiles are less subject to fire damage than dense ones; and while there are objections to the very extensive use of porous terra cotta, these observations indicate that we may expect to find other controllable qualities that affect the behavior of terra cotta under fire. These considerations lead to the belief that investigation would show that the product of some factories has less tendency to break under fire than that of others, and that in the case of a factory whose product was found to be objectionable on account of a pronounced tendency toward cracking, improvement might possibly be made if it were systematically undertaken. As matters stand now, we have no satisfactory standards by which to measure or judge the fire-resistive qualities of hollow tile. The individual manufacturer has no way of knowing what is expected, or what ought to be expected, of his product in this respect, and he cannot, perhaps, be blamed for any seeming indifference about meeting standards which do not exist. The individual architect or engineer finds no standards on which to base his specification, and so he disposes of the matter by writing into his specifications some such perfunctory requirement as "good, hard-burned terra cotta."

NEED FOR STANDARD SPECIFICATIONS

The contractor is satisfied so long as the goods are delivered on time and are of such character as to permit of their being placed in the building at minimum cost; but the insurance rate which the owner pays when he insures his building includes, we are led to believe, a factor of safety, or of uncertainty, which is in some way related to the fact that some tiles in some buildings have been known to break under fire. It may be unwise for the layman to try to find reasons in the fathomless depths of insurance ratings, but if the writer were to suggest a reason for the fact that more credit is not given for hollow tile than is given, it would be that somewhere, back in the subconscious part of the insurance mind, there is the instinct, or the feeling, that here is an indefinite sort of a hazard which may at some time develop into a definite sort of loss. Back in the subconscious fireproofing mind there may be the feeling that here is a class of material which is superior and has been superior for decades and which has, as a class, or in general, certain inalienable rights, including that of credit without test.

While the insurance mind feels that before a material shall have additional credit it should have approval, based on acceptance tests and other requirements, it may be that the fireproofing mind feels that the acceptance test is an artificial sort of thing which does not represent a practical standard. Perhaps a limited amount of systematic investigation, planned and carried out with the one object of eliminating preventable losses in hollow tile, would lead to the adoption of standards that would be acceptable to all interests and would result in an economic saving that would affect, as all large economic savings do, the purchasing public in general.

Some suggestions have already been made as to the possible trend of such an investigation. It should be said, in addition, that such an investigation should include a careful determination as to the possibilities of various plasters as protection for hollow tile. Theoretical considerations, as well as the testimony of numerous observers, indicate that the damage to a tile wall is usually due to the quick heating, or quick cooling, or both, of the side exposed to the fire. Plaster has been found to be a moderately good heat insulator; and since the exposed side of structural tile is usually plastered, it seems important to know how much benefit can be derived from the plaster in resistance to this quick heating and cooling. Undoubtedly much depends on the ability of the plaster to stay in place, and therefore if one sort of plaster can be depended on to stay on better than any other, that ought to be known, and generally known; also, if the ability of the plaster to stay in place depends in any large measure on the nature of the corrugations in the surface of the tile which give the plaster a grip on the tile, that ought also to be known, so that this as well as every other practical means could be used for the prevention of economic loss.

At the beginning of our participation in a war in which our industrial strength seems likely to be taxed to the utmost, it may seem visionary to dwell on any thought of new investigations of this scope. On the other hand, it does seem worth while that those who are interested in fire-resistive construction, and especially those who are particularly interested in hollow tile, should have these things in mind, so that such information as can be obtained from time to time from various sources may be recorded in such forms as to be available for correlation. Hollow tile is rendering a service of great importance over an exceedingly broad field, and all information is of importance if it is put into such form as to assist in cutting down preventable losses and in making it possible for hollow tile to outdo in the future its services in the past.

High-Class Country Residence, Showing Stucco Over Hollow Tile House Construction

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Cleveland Clay Products Firms See Fuel Relief as Government Takes Over Roads

Relief from fuel shortage, as the government takes over the railroads of the country, is the most significant feature in the clay products industry of Northern Ohio, in the opinion of leading members of the industry in Cleveland. This factor, coming at the turn of the year, is believed to hold possibilities for renewed activity in the industry. It cannot be denied that the lack of sufficient fuel, the cutting off from manufacturing establishments of the natural gas supply, and the inability to get materials or make reasonably timely shipments, have combined to hamper the brick and clay industry of this section of the country. Proper management of railroads, and consequent sane handling of freight will undoubtedly offer much relief.

Of particular significance to the brick and clay industry is the fact that, according to railroad heads and coal operators, the unified control can be so efficiently and economically handled that the coal output of Ohio alone can be increased 10,000,000 tons a year, and in the Pennsylvania district which includes that state, Ohio, and West Virginia, the increase will probably be twenty-five per cent. in one year. Corresponding improvement in freight handling is also expected making it possible to increase production of clay materials and make deliveries of same.

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Chas. L. Krager, South's Most Scientific Clayworker, Passes Away

On December 10, the finger of death beckoned Charles L. Krager into the unknown and in his passing, the South lost one who had been styled by experts as its most scientific clayworker.

The story of Mr. Krager's career in the manufacture of clay products is one filled with interest and illustrates the inevitable rise of an indomitable will. In 1864 he was born at Akron, Ohio, where he learned the trade of a potter. After spending many years at this city and realizing success in his work, he departed in 1889 for the South beginning the manufacture of stoneware at Daisy, Tenn.

Later he developed and promoted the vitrified clay turpentine cup, which has so wonderfully contributed to the conservation of the pine forests. His annual output of this product amounted to twenty million cups. The United States government, in its effort to supplant the destructive boxing method, took an active part in the introduction of these turpentine cups.

Just about three years ago, in 1914, in partnership with B. Mifflin Hood, Mr. Krager began the manufacture of vitrified floor tile which undertaking proved to be a success from the very beginning.

Since the beginning of the war, Mr. Krager devoted his fertile mind to the perfection of a packing for Glover and Gay-Lussac chemical towers, with the result that the Hood's "Pottery" Clay Products Co., of Atlanta, Ga., of which he was general manager, produces spiral rings so perfect that chemical engineers consider them to be more efficient and scientific than any packing made abroad.

Mr. Krager never ceased to experiment with clay. The things of most interest on the plant were his test kilns and trials. He believed that the ceramic arts held hidden treasures of priceless value for the diligent searcher into her secrets. So versatile and enterprising was he that at the time of his death he had sufficient business with the government to keep four plants in operation at full capacity for several months.

He was just a plain clay worker, who detested makeshifts, always sought after a perfect product, never satisfied with present results if better could be attained. He was a scientific clayworker who loved and dignified his calling. It may be repeated that in the death of Chas. L. Krager the South has lost one of its foremost clayworkers.

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N. P. B. M. A. Officers Hold Monthly Meeting

The monthly meeting of the office board of the National Paving Brick Manufacturers' Association was held at Cleveland, Ohio, last week. The members present included C. C. Blair, Youngstown; J. G. Barbour, Canton; S. M. Duty, Cleveland. The members were advised that the various war service boards, organized at the request of the Chamber of Commerce of the United States, have held a conference at Washington, which was attended by representatives of a committee of the war service board of the National Paving Brick Manufacturers' Association.

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WAR CONFERENCE *to be* FEATURE *at* COMING IOWA MEETING

A WAR TIME CONFERENCE is to be substituted for the customary program of papers at the annual convention of the Iowa Clay Products Manufacturers' Association, which is to be held at Hotel Chamberlain, Des Moines, on January 23 and 24. Because of the fact that conditions which the clay products men have to meet are so different now than in normal times, it was decided by the officers of this association that by converting the annual convention into a discussion of the many grave problems confronting them, more good could be accomplished than by holding the ordinary kind of meeting.

Every clay manufacture realizes that by co-operating with his fellow manufacturers and acting together, they will have the prestige given by numbers and uniform policy, on the other hand, by acting alone, they will be unnoticed by public officials and they will be cutting each other's throats in their bids for fuel, cars, labor and customers. To prevent the latter from taking place every manufacturer of clay products in Iowa has been asked to have his plant represented at the convention.

The following problems which every plant owner would like to and should know the solution of, will be held under discussion:

1. Car shortage and distribution, under which head will be discussed (a) putting the case before proper officials, and (b) confining shipments to short hauls.

2. Labor shortage; this head will include the discussion of (a) exemptions, (b) attitude toward "shifters," (c) employment of boys and old men, (d) wage systems, (e) labor saving devices, (f) shall an attempt be made to maintain capacity production?

3. Fuel shortage. By a discussion of the following items it is hoped that this difficulty can be alleviated to a great extent. (a) Securing fair prices and an adequate supply by concerted action, (b) producer gas, (c) methods and devices for conserving fuel in burning, drying and power production.

4. Making the manufacture of drain tile an "essential industry" during the war. This subject will be split up under the following heads: (a) reasons, (b) proper action.

5. Income tax problems, under which head will be taken up (a) the meaning of the various provisions, (b) methods of determining tax you owe, (e) possible action to correct injustices to clay products manufacturers.

6. Shall we get a fair profit? Now, more than ever before, should this phase be taken up under the following divisions: (a) necessity for knowing costs, (b) methods of obtaining costs, (c) co-operative advertising, and (d) the "open price" system.

From the above outline it is quite obvious that this meeting will be one of the most interesting ever held and any one who has attended the former meetings of the Iowa Clay Products Manufacturers' Association knows the full significance of the foregoing statement.

RATTLER TESTS *for* PAVING BRICK *of* VARIOUS DEPTHS

Tracing the Development of the Standard Paving Prick Test and Offering a Solution to the Problem Presented by the Adoption af the Three-Inch Brick for Monolithic Road Construction

By William C. Perkins, C. E.

Chief Engineer, The Dunn Wire-Cut Lug Brick Co., Conneaut, Ohio. Presented Before Section D of the American Association for the Advancement of Science.

IT IS VERY IMPORTANT to have a definite, universally accepted method of testing any paving material. Paving engineers in their specification call for a certain grade of material, one designed to withstand expected conditions of traffic and loading, and it is necessary that they have some standard method of determining if they are obtaining what they call for and that for which the taxpayers spend their money.

Many methods have been devised for the testing of paving brick. Tests formerly employed, as, for instance, for specific gravity, crushing strength, percentage of absorption, etc., have been practically abandoned.

The main test now is for abrasion and impact and it is generally called the "rattler test." This exceeds in importance all other tests combined; in fact, if a paving brick passes a satisfactory rattler test, it should be able to pass any and all of the other tests.

The present standard rattler is a development of the old foundry rattler and in the old days the bricks and scrap iron were tumbled in a revolving barrel such as is found in many foundries and thus, in a crude way was obtained a comparison of different makes of paving brick.

DEVELOPMENT OF RATTLER TEST

The first attempt to standardize the rattler was made by Professor Ira O. Baker, about 1890. Later Professor Edward Orton, Jr., in conjunction with the National Brick Manufacturers' Association, made a series of experiments, and as the result of these experiments a standard method of testing paving brick by the rattler was adopted in 1897. This was only a beginning, and further experiments were made by Professor Talbot of the University of Illinois, principally along the lines of the composition and shape of the abrasive charge. In 1901 The National Brick Manufacturers' Association recommended the adoption of a standard rattler, using an abrasive charge of 300 lbs. of ordinary machinery cast iron. This charge consisted of 225 lbs. of 1½ inch cubes, with square corners and edges, each weighing about ⅞ of a pound, and 75 lbs. of rectangular prisms, 2½ inches square, by 4½ inches long, with their edges rounded, weighing about 7½ lbs. each. A standard method of making the test and standard methods of calculating the results and making the records were devised and this rattler was generally adopted by paving engineers.

While this rattler gave fairly good results it was observed that its efficiency was impaired and variable results were caused by seemingly unimportant details such as the condition and stiffness of the staves of the barrel; the chemical composition of the cast iron of the abrasive charge; the number of times the rattler was used without changing the staves or the abrasive charge; the number of rotations of the rattler and the method of driving same, etc. Efforts were made to correct these variations, and in 1910-11 the National Paving Brick Manufacturers Association and Professor Edward Orton, Jr., made another extended series of tests and devised specifications which gave in much detail the method of construction of the rattler, the method of driving same; the shape, size, weight and chemical composition of the abrasive charge, the manner of operating the test, etc.; and in 1915 these specifications were adopted by the American Society of Testing Materials, and they have been widely used by engineers as the standard method of testing paving brick.

These specifications made several radical changes from the old rattler, notably in the abrasive charge. The shape of the charge was changed from cubes and prisms to cast iron spheres of two sizes; of which the collective weight was specified as 300 lbs. This charge was to be made up of ten cast iron spheres 3¾ inches in diameter and weighing about 7½ lbs. each, and from 245 to 260 small spheres 1⅞ inches in diameter and weighing about 0.95 lbs. each. The chemical composition of the cast iron in these spheres was also defined within certain limits.

SPHERICAL CHARGE CAUSES GREATER LOSS

Paving bricks of the same burn tested with spheres in the new rattler show a differential of about 4 per cent. over the test in the old rattler in which cubes were used. In other words, the new rattler with spheres is more severe (but at the same time more uniform) than the old rattler with cubes.

Paving engineers should remember this in designating their permissible limit of loss. Specifications which under the old rattler called for an 18 per cent. brick should now call for a 22 per cent. brick if tested on the new rattler.

The specifications for the brick charge call for ten bricks of the so-called "block-size," and also state that when brick of larger or smaller sizes than the dimension given for "blocks" are to be tested, the same number of bricks per charge should be used, but allowance for the difference in size should be made in setting the limits for the rattler loss.

ADOPTION OF STANDARD PAVING BRICK

The first paving brick made were of the common brick size, 2½ inches wide, 8½ inches long, and 4 inches in depth. Later these dimensions were increased to the "block size," but no standard block size was adopted—the dimensions falling between 8 and 9 inches in length, 3 and 3¾ inches in width and 3¾ and 4¼ inches in depth. Paving engineers asked for a standard size but the manufacturers claimed that it was impossible to standardize a paving brick. However, their claim has been disproved and the manufacturers are now making brick of a standard size, 3½ inches wide excluding lugs, 8½ inches long, and 4 inches in depth and laying in the pavement forty bricks to the square yard. The American Society of Municipal Improvements, at their meeting in 1916, eliminated the brick size from their specificatons and changed the word "block" to "brick," calling for a standard paving brick 3½ inches in width, 4 inches in depth, and 8½ inches in length with certain small variations from these dimensions.

Since the use of monolithic and cement-sand bed construction there has been a demand from the engineers for a brick 3 inches in depth, but of the same surface measurement as the standard brick. It is claimed that a brick 3 inches in depth, laid in a cement-sand bed or directly in the green concrete, will give a stronger pavement than a brick 4 inches in depth, laid on the plain sand cushion.

Many articles on this subject have appeared in the engineering papers and there is no question but that a brick 3 inches in depth is both economical and durable; and manufacturers of paving brick are ready to meet the demand for a brick of this depth where same is specified.

Now the problem is, what allowance or differential shall be given to a brick 3 inches in depth? The specifications for the rattler test distinctly state that some allowance must be given when bricks of other dimension than the standard are tested. Several authorities have given an arbitrary allowance; others have tested 12 and 13 bricks, but as yet no standard allowance has been determined. The practical testing of 3 inch brick gives no authentic data. Some 3 inch brick have tested as well as the 4 inch brick of the same make and others have run poorer. There is no doubt that the liability of a 3 inch brick breaking in the rattler is greater than of the 4 inch brick, and when this happens of course there are more edges under abrasion.

DETERMINING FACTORS IN RATTLER TEST

In the testing of brick in the rattler the two essentials in determining the result of the test are the weight of the brick and the number of lineal inches of edges which are under abrasion, as the loss in the rattler is mainly due to the edges being worn or broken off. This loss varies with the form of the edge or corner of the brick. If a brick has square edges it will lose more in the rattler than one having rounded edges. This variation is especially true during the first 600 revolutions of the rattler. Some paving engineers recognize this variation and allow a differential of from 1 to 2 per cent. in testing a standard wire-cut lug brick.

A standard 4 inch brick (3½-in. x8½-in. x4-in.) has 64 lineal inches of edges, while a standard 3 inch brick (3½-in. x8½x3-in.) has 60 lineal inches of edge, or 6¼ per cent. less. Upon an examination of the bats of 3 inch and 4 inch brick after they have been rattled the center one inch of the 4 inch bat shows very little loss except at the edges. In other words, the bats show that the 3 inch and 4 inch brick will lose very nearly the same weight of material, the 3 inch brick possibly losing 6¼ per cent. less material, on account of the abrasion on the edges of the middle inch of the 4 inch brick. Therefore in comparing the two bricks we will not consider the square inches of surface under abrasion, as undoubtedly there is very little variation in loss due to surface abrasion.

Therefore, the two determining factors in the rattler test are the weight of the brick and the number of lineal inches under abrasion.

Let us assume that the specifications call for a 22 per cent. loss for a 4 inch brick; then our factors are: 10-4-in. bricks weigh 100 lbs. and having 640 lineal inches of edges. 10-3-in. bricks weigh 75 lbs. and having 600 lineal inches of edges.

By compound proportion, remembering that the heavier the brick the better the test, and the more lineal inches of edges the poorer the test, we have:

75 : 100
640 : 600
:: 22 : X

Solving this proportion we find X equals 27½ per cent., which would be the theoretical permissible loss of a 3 inch brick under a 22 per cent. specification for a 4 inch brick.

This can be checked by putting in the rattler 100 lbs. of 3 inch bricks and eliminating the weight factor, thus: 10——4-in. bricks weight 100 lbs. and having 640 lineal inches of edges. 13⅓-3-in. bricks weight 100 lbs. and having 800 lineal inches of edges.

the proportion would then be

640 : 800 :: 22 : X

Solving for X we find 27½ per cent. the same as in the first proportion.

RATTLER ALLOWANCE FOR THREE-INCH BRICK

The City of Baltimore has used a considerable number of 3 inch brick and we hereby submit a report made by Frank A. Duncan, Principal Assistant Engineer, to Major R. Keith Compton, Chairman of the Paving Commission:

> "I beg to submit herewith my investigation as to the allowance that should be made in testing the paving brick 3 inches in depth. * * * *
>
> "In order to determine this I took a standard —— brick, which is 3½-in. wide, 4-in. deep and 8½-in. long, getting its cubical contents and its weight, and then selecting a tested brick showing a uniform loss and which I found to be 18 per cent. My idea was to determine the loss of the one-inch in depth which is eliminated when we test a 3-inch brick. This 1 inch strip must be considered as coming out of the center of the 4 inch brick. This is so because the wearing of the corners and edges are similar in a 4 inch and 3 inch brick. I found that the loss of the 1 inch strip when tested in the 4 inch brick was 7.3 per cent. of its own volume. The total brick is represented as 100 per cent. and the 1 inch strip as 25 per cent. of the total volume of the brick. Therefore a loss of 7.3 per cent. on 25 per cent. of the brick is equal to a proportionate loss of 1.8 per cent. on 100 per cent., or the brick itself; and the total loss on the brick being 18 per cent., 1.8 per cent. would be 10 per cent of the total loss. In other words the 1 inch strip would lose 10 per cent. of the total loss of the whole brick."

This investigation considers the surface abrasion on the middle inch as well as the abrasion of the edges and Mr. Duncan states in this instance it was 10 per cent. of the total loss. This is an inviting field for further investigation.

Let us assume that ten 4 inch brick lose 22 lbs. in weight when rattled, and if they weigh 100 lbs. this would be a 22 per cent. loss. Now if the middle inch loses 10 per cent. of the total loss, then theoretically ten 3-in. brick should lose 19.8 lbs. in weight when rattled; but as these brick only weigh 75 lbs. this would mean a 26.4 per cent. loss, altho in reality they lost less weight of material than did the ten 4 inch brick. It is therefore offered for the consideration of engineers that instead of specifying in "percent of loss" that they specify the maximum amount of "loss in pounds" which ten brick shall lose in the rattler. This would eliminate the element of weight, and the rattler test as written in the specifications would apply to all depths of standard brick, (3½ in. wide x 8½ in. long) no matter whether the bricks are 5, 4, or 3 inches in depth.

In the testing of brick the large spheres used in the abrasive charge weigh 7½ lbs. each and are heavier than the average weight of the individual 3 inch brick. When the rattler was originally designed the large shots were supposed to imitate the impact due to horses' hoofs and the bumping of wagon wheels. Traffic conditions have changed to some degree and the determination of impact is not as important as formerly. Some engineers believe that the use of large spheres are detrimental in the rattler, as results may be obtained which are accidental; for instance, if a brick becomes bridged in the rattler and is struck in the center with a large shot, the brick is liable to break, altho there may be no structural weakness. Every broken brick adds more edges under abrasion and causes a variation in the test. Would we not obtain a more uniform test if we replaced the volume of large spheres by 75 lbs. of the small spheres, thus using the same weight of charges, 300 lbs., for testing, but all small spheres?

SMALLER SPHERE GIVES MORE UNIFORM RESULTS

In April, 1916, the Bureau of Tests of the State Highway Department of New York made a series of tests on wire-cut lug brick using the (1) standard charge, (2) using 300 lbs. of small shot only; (3) using the large shot only. In these tests the brick were weighed at the end of every 100 revolutions and the percentage of loss calculated and these results plotted as a curve. Upon an examination of these curves, the curve representing the percentage of loss due to the charge of small shot is much more uniform than the curves representing the other charges; thus showing that this test is not subject to the accidental breaking of bricks or spalling of corners incident to tests using the large shot.

In the testing of 3 inch brick of course the effect of the large shot is more detrimental, and Mr. Duncan, of Baltimore, in his report states "that many of the 3 inch brick are broken, which causes a greater loss."

At the present time the paving commission of the City of Baltimore, when they test their 3 inch brick, are using 10 brick, replacing the weight of the large spheres by small ones and bringing the abrasive charge up to 300 lbs., and allowing an additional loss of 1½ per cent. to their standard loss of 22 per cent. for 4 inch brick.

It has been suggested that in testing the 3 inch brick the large spheres be reduced in size so as to be able to obtain a uniform comparison of the tests between 3 inch and 4 inch brick; but I personally believe that if the large spheres are discarded and only a charge of 300 lbs. of small spheres are used a more uniform test of the brick will be obtained. Here again is a fertile field for investigation by testing engineers.

There is no doubt that a differential must be allowed a 3 inch brick over the permissible loss in per cent. specified for a 4 inch brick. How much to allow is the question. Theory shows a certain allowance. Practical tests show a variation. Some advise the elimination of the large shot and a figured allowance, etc., etc. From present data why not specify the permissible maximum loss in weight of abrased material or compromise on a differential of 4 per cent. over the specified per cent. of loss of a 4 inch brick.

* * *

BRICK, TILE *and* POTTERY MAKING *in the* FOOTHILLS *of the* CUMBERLANDS

PICTURESQUELY TUCKED AWAY in the foothills of the Cumberland Mountains at Bybee, Ky., is the quaint and interesting plant of Walter Cornelison. Altho small and unpretentious in appearance and outlook, the plant possesses a history which lends to it a great distinction.

Bybee lies at the eastern edge of Madison County, which is half Bluegrass and half hill land. Just beyond Mr. Cornelison's property rise the foothills of the Cumberland Mountains, and to the east lies Estill County with its oil boom in full blast, denoting an activity auguring well for the future prosperity of the decades-old clay plant.

A glance at the illustrations, shown herewith, are sufficient to prove that, under some conditions, a brick and clay products plant can be made as attractive from the artistic standpoint of view as a gardener's cottage or woodland scene. The picturesque quality comes from the age of the plant and the character of its construction, of course, which show it to be an old one, as indeed it is. Mr. Cornelison's father constructed it before the Civil War—sixty years ago to be exact—and operated it with some intermissions until his son took hold about fifteen years ago.

Pioneers in this section can recall the time when there were five more or less similar plants in the vicinity of Bybee, but time in its flight, has checked off all but that operated by Mr. Cornelison at Bybee and another a short distance away.

It is interesting to recount the struggles which this small factory made for the right of existence. When started, the clay did not seem suited to the manufacture of pottery,

The Entrance to Mr. Cornellson's Historic "Log-Cabin" Factory Building which is one of the principal products of the plant. The ware usually went to pieces during burning and as a result the material quickly acquired an ill reputation. Mr. Cornelison experimented for some time and found that by mixing another clay a composition was produced which withstood satisfactorily the process of manufacture. Many potters are said to have stated that Mr. Cornelison would never be able to make a white glaze with the clay he uses—but the ware comes out of the kiln with a good white glaze.

Three Views of the Quaint Old Plant That Has Been Doing Duty for More Than Sixty Years, Down in the "Bluegrass State."

Most of the sales are made at the door of the factory, which fortunately, faces upon one of the best roads of that section. Much of the pottery goes to Richmond, the county seat, and some is hauled by wagon to a station three miles away, to be transported by rail.

Brick and drain tile are also on the list of products turned out by this venerable plant. Soft mud brick is sold to farmers at the door and constitutes the greater part of the output in these lines. An inventory of the salient features of the plant's equipment includes a 30 h. p. boiler and a 25 h. p. engine which supply the power for the brick machine, an open air dryer, and an eighteen foot kiln, which holds about 4,000 gallons of pottery ware. Also, two potter's wheels, having a combined weekly capacity of about 2,000 gallons are being operated by the plant.

Brick manufacturing and pottery making in the neighborhood of Bybee dates back for more than one hundred years, altho it has always been on a comparatively small scale. The first manufacturing plant of which Mr. Cornelison has any knowledge, was erected in close proximity to the site of his plant about seventy-five years ago and the information available indicates that it was operated by slave labor. There are a number of fine old mansions in Madison County, built for the most part of domestic or imported hand molded brick, but none of these were supplied by the part of the county in or near Bybee.

The section of Madison County adjoining the plant, is now given over, under the supervision of government experts, to melon culture, and there is every reason to believe that what has been a sparsely settled and carlessly tilled section of the county for many years will shortly be very much in the market for the drain tile and brick that Mr. Cornelison's quaint and historic plant is equipped to provide.

Louisville Association Re-elects Officers

The first January meeting of the Brick Association of Louisville, an organization made up of the manufacturers and dealers of the city, was the annual meeting and saw the re-election of all of the officers who have served during the year just passed. T. Bishop, of the Southern Brick & Tile Co. was re-elected president; H. H. Frazier, of the R. B. Tyler Co., vice-president; Isaac Tyler, of the Tyler Building Supply Co., secretary, and Karl S. Markendorf, of the Union Cement & Lime Co., treasurer.

There was no celebration to mark the end of the year and the re-election of the officers was by acclamation, and in connection with the adoption of a resolution in which the members expressed their obligation to the officers for the services rendered in the year. This organization, the former name of which was the Louisville Brick Manufacturers' and Dealers' Association, soon demanded the present name to make it a handier one.

Summing up the accomplishments at the end of the year, several of the leading members expressed the opinion that a great deal of good has been accomplished for the trade in Louisville. For one thing the credit situation has been straightened out to the point where losses from this source need not again cause trouble. The contractors now know what they may expect from the brick manufacturers and the dealers; the matter of deliveries has been straightened out and uniform practices are in vogue; competition has been made clean, and good feeling generally has been created where before there was at best ignorance of the other fellow and his methods of doing business.

* * *

Figures Show Cost of Poor Construction

Iowa farmers spent in construction and maintenance of farm buildings during the year 1917 $42,000,000. To bring this figure to easier realization, every day during the year fifteen complete farmsteads were built, or a money equivalent ent in maintenance and upkeep.

These figures have been gained from an exhaustive study made by C. P. Platt, of Van Meter, Ia., secretary of the Permanent Buildings Society and have been given out from the Des Moines headquarters of that organization.

Still more astonishing than the large amount of money spent is the fact that of the $42,000,000, for every dollar spent for construction a dollar was required for maintenance. In other words it was a fifty-fifty split. Mr. Platt has figured it down to the point that every fifteen minutes the Iowa farmers are paying $1,250 for upkeep of their buildings.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

This, the Fourteenth Installment, Points Out the Restrictions in Routing and Direction of Traffic to Which Territorial Rates are Subject

By Sydney A. Hale

SYNOPSIS: Freight rates are a direct tax upon every business. Because transportation is a necessity and the service of common carriers quasi-public in its character, Congress has seen fit to take over the regulation of interstate rates. By statute it has set up the standard that all charges must be just, reasonable and neither unduly discriminatory nor preferential. It has given tariffs properly filed the effect of rates imposed by law. There are three factors common to every road-haul rate, viz., application with respect to commodity, quantity and territory. From the commodity standpoint, the basis of rate-making is the freight classification. Directly dependent upon this are class rates and exceptions. Finally come special or commodity rates. Quantitatively considered rates are either carload, less-than-carload or any-quantity. The rate unit in all cases is 100 pounds. Carload rates are subject to minimum carload weights, while less-than-carload and any-quantity rates are subject to minimum charges fixed with respect to minimum weights. In their application as to territory, rates are either local or through, the former being confined to movement over one line and the latter over two or more lines of railroad. Thru rates are either joint or combination. The territorial application, as explained in this article, is subject to restrictions as to routing and direction of traffic.

THE COMMISSION HAS HELD that the carriers are empowered to restrict the routing and that shippers are required to look only to the tariff for rates applicable. —Buckeye Lumber Co. v. N. P. Ry., Unreported Opinion 2230.

The final and frequently the most important question to be considered in determining the territorial application of a road-haul rate is the particular route or routes via which it is effective. As will be seen in the subsequently discussion of accessorial rates and services, the attractiveness of a particular route or rate may be considerably augmented or diminished by reason of special terminal or transit features available in connection with their use. Where the rate is published in an individual tariff or in a joint tariff participated in by a few carriers, the matter of routing is simplified because the option of routes is either wanting or very small.

Many rates, however, are not so published, but are contained in agency issues and cover the movement between the same points via several competing carriers. An agency tariff is, in a measure, analogous to a freight classification in the manner of its publication. Just as the carriers, for reasons of uniformity and simplicity, have combined and formed three classification groups, so, in rate-making, they have divided the country into a number of rate groups and organized committees to have charge of tariff publication for much of the traffic handled between points in such territories.† When, for example, one of these communities publishes rates for all lines traversing the territory between Chicago and Buffalo and Pittsburgh, it can easily be seen that the routing question assumes a commanding importance in such publications.

LAW GIVES SHIPPER ROUTINE CONTROL

At one time, not so many years ago, where traffic moved under joint thru rates, over a route composed of several different lines, the shipper's voice in routing was confined to his selection of whatever initial carrier he elected to employ and his designation of the line via which he wished final terminal delivery made. Carriers might, if they saw fit, extend to him the courtesy of expressing his preference as to intermediate routing, but he could not demand that privelege as a right. Since 1910, however, the Act to Regulate Commerce has provided that:

"In all cases where at the time of delivery of property to any railroad corporation being a common carrier, for transportation subject to the provisions of this Act to any point of destination, between which and the point of such delivery for shipment two or more thru routes and thru rates shall have been established as in this Act provided to which thru routes and thru rates such carrier is a party, the person making such shipment, subject to such reasonable exceptions and regulations as the Interstate Commerce Commission shall from time to time prescribe, shall have the right to designate in writing by which of such thru routes such property shall be transported to destination; provided, however, that the shipper shall in all cases have the right to determine, where competing lines of railroad constitute portions of a thru line or route, over which of said competing lines his freight shall be transported."

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†The more important committees and associations are as follows:

Transcontinental Freight Bureau (Chicago, Ill.): Publishes rates between the Pacific Coast and intermountain country and the balance of the United States.

Trunk Line Association (New York, N. Y.): The territory covered may be roughly described as that portion of the United States lying north of the line of the Norfolk & Western Ry. from Norfolk, Va., to Kenova, W. Va., east of the Ohio River and a line extending from Pittsburgh, Pa., through Salamanca, Dayton, Buffalo and Lewiston, N. Y., and west of the New England states.

New England Freight Association (New York, N. Y.): Covers the New England states.

Central Freight Association (Chicago, Ill.): This association's territory covers that part of the Official Classification territory west of Trunk Line territory.

Western Trunk Line Committee (Chicago, Ill.): This committee has jurisdiction over traffic crossing the Missouri and Mississippi Rivers and originating at or destined to points in Illinois, Wisconsin, Kansas, Nebraska and Colorado common points.

Southwestern Tariff Committee (St. Louis, Mo.): Publishes rates on traffic between Arkansas, Oklahoma, Texas and points in Louisiana west of the Mississippi River.

Southeastern Freight Association (Atlanta, Ga.): Publishes tariffs covering traffic in Virginia, the Carolinas, Georgia and parts of Tennessee, Alabama and Florida.

Southeastern Mississippi Valley Association (Louisville, Ky.): Operates south of the Ohio River and west of the territory of the Southeastern Freight Association, covering traffic in Kentucky, Tennessee, Mississippi, Alabama and Florida.

Southern Freight Association (St. Louis, Mo.): Jurisdiction extends over rates from St. Louis and East St. Louis to traffic via Ohio River crossings, when destined to southeastern and Carolina points; to Memphis, Tenn., Mississippi River common points south of Memphis and Mobile, Ala.; to points south of the Ohio River, Cairo and Brookport, Ill.; on and west of the Nashville, Chattanooga & St. Louis Ry., from Paducah, Ky., to Paris, Tenn.; the Louisville and Nashville, Paris to Milan, Tenn.; the Illinois Central, Paris to Jackson; Mobile & Ohio from Jackson to Mobile and east of the east bank of the Mississippi River, Cairo to New Orleans, La.

The territorial descriptions here given are designed to give a general idea of the extent of the various territories, rather than an actual statement of their boundaries. As in the case of classifications, rate territories in many cases overlap. Every tariff published, however, must give specific information as to its application or reference to some other issue in which such territory is described.

EFFECT OF ROUTING AMENDMENT LIMITED

The effect of this amendment, however, is not as broad as a first reading would imply. For example, there are agency tariffs participated in by as many as 500 different carrers. The routing combinations, if unlimited under such a tariff, would tax the ingenuity of the rate expert to cover To avoid unreasonably circuitous routing and to protect the revenues of the carriers, the application of such rates, is, in many cases, limited to specific routes or routing thru specific junction points. If a certain carrier's line covers the greater part of the distance between two specific points, the carrier will often see that an agency tariff contains such routing restrictions that it will not be possible to use its line as an originating road for but a short portion of the thru haul.

In addition to seeking protection against short-hauling, application of rates may be limited to certain routes because other lnes are publishing higher or lower rates on the same tariff in other tariffs. The practice here may be likened to that governing classification exceptions. Because an individual road does not concur in all the rates or routings carried in an agency issue, it does not withdraw from participation in the entire tariff, but only makes such exceptions as its own traffic policy may dictate. In the absence of routing instructions, however, the rates named are applicable via the lines of all carriers parties to the tariff.

Since the shipper has the election of his routes, he must also accept the responsibility of knowledge of rate application which such election carries. If the rates between two points via different routes is higher in one case than in the other and a shipper tenders a bill of lading routing his shipment via the more expensive way, he can not be heard to complain that he was damaged. If, however, he tenders a bill specifying a route and a rate which is not applicable via that route, then the carrier accepts such billing at its peril. The conflict between rate and route making the directions impossible of fulfillment, the carrier must either return the billing to the shipper for correction or carry the shipment at the lowest rate. Even in the latter case, it may become liable because privileges available via the route named did not apply via the route used.

LOWEST RATE MUST APPLY

Where the shipper tenders his freight without specifying either rate or route, the duty devolves upon the carrier to transport that shipment via the lowest reasonable, natural route. That does not mean that it is called upon to turn it over to a competitor if a lower rate is in effect via such competing line. Neither is it expected to be able to fathom the unexpressed mental desires of the shipper. Therefore, if a reconsigning privilege is available via one route and not via another, the carrier can not be held liable for the loss of such privilege if the rate via both routes is the same. Where both shipping tickets and bills of lading are employed, it has been held that the carriers are not liable for misrouting where instructions on the former have been followed, altho in conflict with those contained in the bill of lading.

Finally, in considering the territorial application of rates, strict attention must paid to the matter of their publication. A rate reading "from" and "to" does not apply "between." Ordinarily, of course, there can be little justification for applying higher rates in one direction than in the other, but special operating conditions, competition or the preponderance of traffic in one direction may make such differentiation reasonable. A tariff naming rates "between Birmingham and Atlanta" would apply upon shipments from Birmingham, but a tariff reading "from Birmingham to Atlanta" would not be applicable upon a movement from Atlanta to Birmingham.

* * *

Program for Canadian Convention

Our brother workers in clay across the border are preparing a meeting of unusually high caliber to somewhat straighten the backbone of the business which has become somewhat weakened, because of the discouraging conditions which confront the industry in Canada.

The convention will be held at the Prince George Hotel in Toronto on Tuesday, Wednesday and Thursday, January 29, 30 and 31, and the subjects which will be presented and discussed, are briefly outlined in the following:

"The Workings of the Workmen's Compensation Act and How Assessments are Determined for the Different Classes," by Samuel Price, chairman of the Workmen's Compensation Board of Ontario, Toronto.

"The Relation of the Economic Geologist to the Clay Industry," by N. B. Davis, B. Sc., M. A., Kingston.

"Kiln Konstruction Kinks," by W. G. Worcester, secretary of the Alberta Clay Products Mfrs. Association.

"Burning by the Use of Forced Draft and Low Grade Fuel," by W. G. Worcester.

"Features of Construction of a Big Brick Factory," by A. F. Greaves-Walker, ceramic engineer of the American Refractories Co., Baltimore, Md.

"Manufacture of Floor and Wall Tile," by Jas. McCabe, ceramic engineer of the Frontenac Floor and Tile Co., Kingston.

"Producer Gas-fired Dryers," by R. H. McElroy, International Clay Machinery Co., Dayton, Ohio, based on experiments by Profs. Parmalee and Hursh, at the University of Illinois.

"Tile," by Prof. W. H. Day, B. A., Ontario Agricultural College, Guelph.

"Motor Trucks in the Brick Business," by Angus German, manager Sun Brick Co., Toronto.

"Sewer Pipe Manufacture," by F. Coleman, M. B., of the Hamilton & Toronto Sewer Pipe Co., Hamilton. Discussion opened by Andrew Dodds, of Ontario Sewer Pipe Co., Mimico.

"Brick Manufacture," by L. L. Plant, Georgetown.

"Refractory Materials in Canada," by Joseph Keele, B.Sc., chief engineer, Ceramic Dept. Mines Branch, Ottawa.

It is expected also that C. W. Price, field secretary of the National Safety Council, Chicago, will be present, and take part in the convention.

In addition a large number of questions will be introduced for discussion. Included among these are: (1) What can be done to stimulate tile production?; (2) Best method of artificial drying for small manufacturers; (3) Kiln ideas to conserve coal; (4) Relation of furnace level to kiln floor; (5) Comparison of N. S. and U. S. coal for firing refractories; (6) Market in Canada for refractories; (7) Is it cheaper to use crude oil (as fuel) than coal?; (8) What are the prospects of the clay products manufacturer after the war?

The annual banquet will be held at the Prince George Hotel, Wednesday night, January 30, with Joseph Russell, M.P.P. as toastmaster. Write G. C. Keith, 435 Grace Street, Toronto, for further particulars.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

SNOW SHOULD BE KEPT OFF THE KILN TOPS

Altho heavy and almost daily snow storms of the present season make it difficult to keep the tops of kilns which are not under fire from being covered with snow, yet the results which often follow the neglect of this work are costly enough to warrant daily attention being given it. When snow is allowed to accumulate on the crowns between burns, alternate periods of thawing and freezing cause some of it to run into the interior of the crown and walls, and upon the approach of freezing temperature again, it solidifies. The effect of this action upon the refractory brick of the kiln is readily apparent. The porous brick absorb the water and the latter substance, upon freezing, expands, of course, with the result that a great deal of pressure is exerted within the brick. This frequently causes the brick to spall or crack.

On the other hand, if by lighting the fires in the kiln you cause the snow on top to melt and become absorbed by the brick you subject the brick to the danger of becoming disrupted owing to the great pressure exerted by the steaming water, which becomes so upon the application of intense heat.

The most important reason why it is good policy to sweep off the kiln crowns is because of the heat lost if this is not done. We all know that the greater the difference there is in temperature between two bodies the greater will be the radiation. This applies in the case of kiln tops, hence keep your kiln tops swept off.

⁂

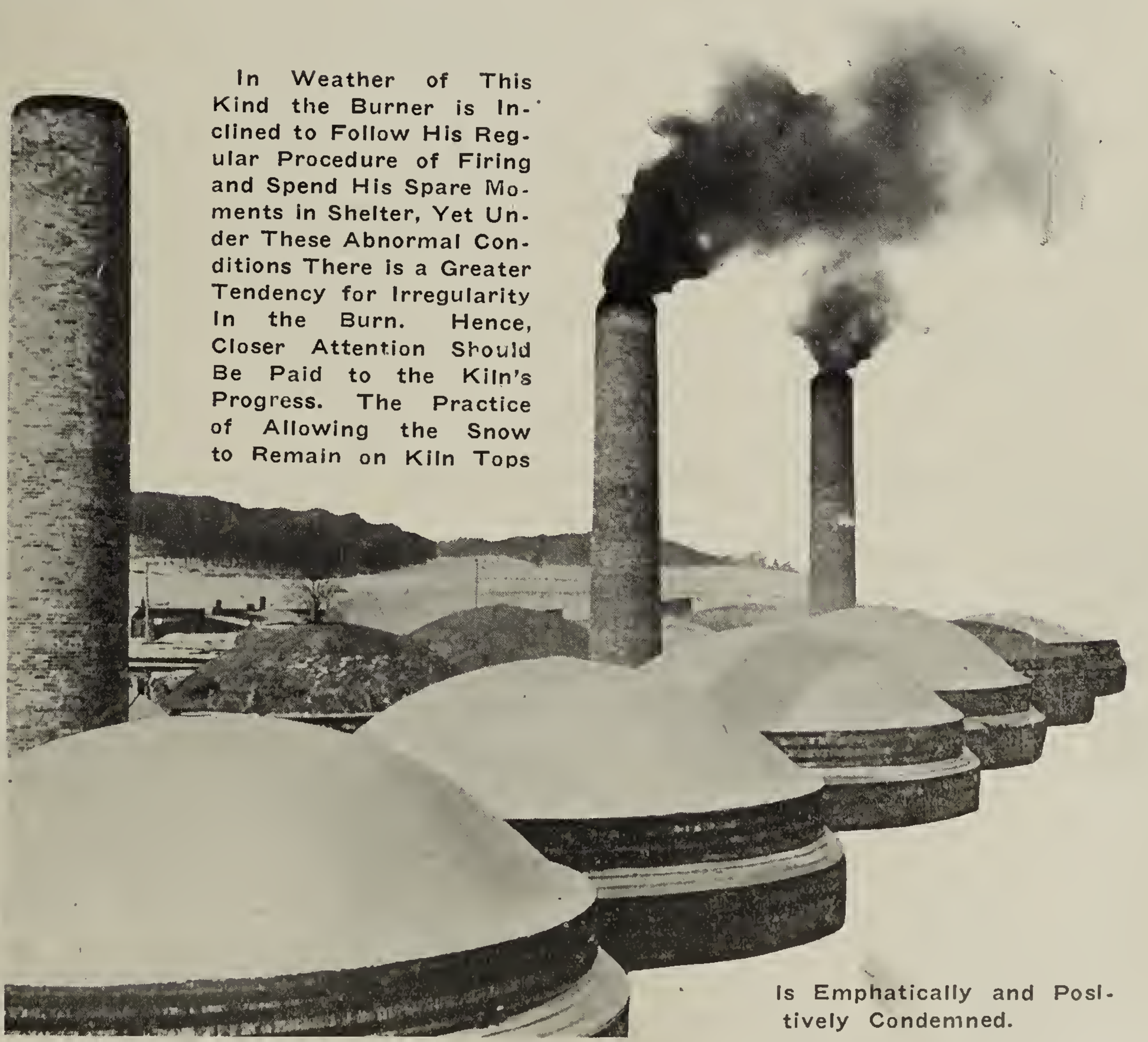
Correcting Dryer Conditions

During the past month three drain tile manufacturers have written to *Brick and Clay Record* asking for suggestions in solving problems arising in the drying of their ware. In each case the trouble did not lie in the drying qualities of the clay but rather in the construction of the dryer, which leads us to believe that a few remarks on drying and dryer shed construction would be very timely.

Before taking up the subject of drain tile dryers it is well to mention briefly the general principles of drying which must be observed. Drying cannot take place without the consumption of heat, and the same amount of heat is required in each instance for the same quantity of water to be evaporated. The heat is absorbed in the transformation of the water into water vapor, or moisture, as we commonly call it. By changing over to this physical state the water simply volatilizes and passes into the atmosphere. With the same relative humidity, the evaporation of the water will be more rapid the greater the surrounding temperature. The part which temperature plays in drying is very important and it is one subject which every man interested in the clay products industry should understand thoroly.

Other things being equal, the greatest economy and efficiency in drying will result when the source of heat and the ware to be dried are closely associated. This is obvious when we remember that radiation and convection tend to divert flow of heat from the desired path. Hence, whenever possible, the ware to be dried should be near at hand to the source of heat.

While the above two principles are more or less pretty well known by most clay men, the part which air plays in drying is often misunderstood. In a strict sense air has nothing whatever to do with drying. It acts simply as a vehicle to carry away the water vapor, or, to be more exact, it is used to create a current, or a draft, to sweep away the water



In Weather of This Kind the Burner is Inclined to Follow His Regular Procedure of Firing and Spend His Spare Moments in Shelter, Yet Under These Abnormal Conditions There is a Greater Tendency for Irregularity In the Burn. Hence, Closer Attention Should Be Paid to the Kiln's Progress. The Practice of Allowing the Snow to Remain on Kiln Tops Is Emphatically and Positively Condemned.

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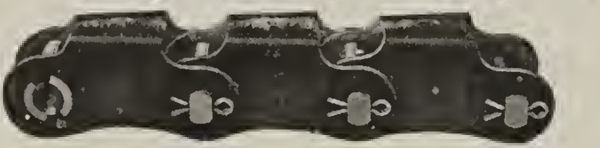

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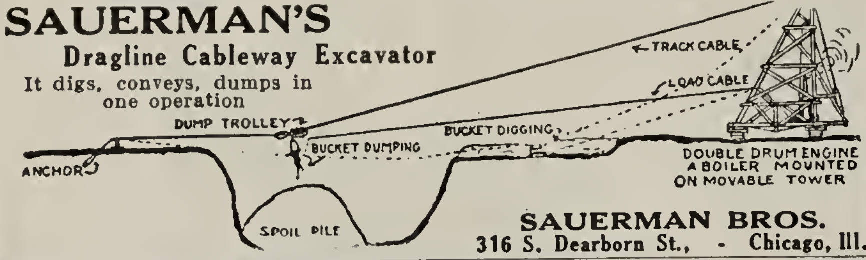

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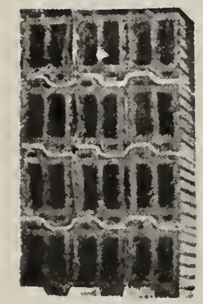

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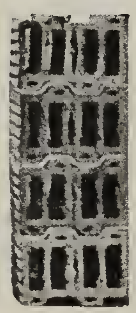

vapor as fast as it forms. Hence, it is true that we use air in drying, but not for drying. Furthermore instead of air absorbing vapor, the latter displaces it due to its pressure. In a vessel containing boiling water there is theoretically no air present, it being displaced by the water vapor or "steam" formed.

Many people have the erroneous idea that moisture ladened air is heavier than dry air and attempts have been made to dispose of the moist air from buildings thru outlets built in the lower part. This is a great mistake and it should be remembered that the more moisture air takes up the lighter it becomes, and completely saturated air has the least weight per cubic foot, provided, of course, the comparison is taken at the same temperature.

WHY CONDENSATION TAKES PLACE

Air at a definite temperature has a definite capacity for holding moisture. When that capacity is reached the air is called saturated. If any more moisture be added it will condense as water instead of remaining in the air as vapor. The higher the temperature the more moisture the air will hold. Hence, if you have air nearly saturated at a certain temperature, when its temperature is lowered ten or fifteen degrees its capacity for holding vapor is lessened and some of the moisture contained in it will condense and exist in the liquid state again.

This is often illustrated in a drying shed where the air as it comes up thru the lower floors gradually takes up more water, at the same time experiencing a drop in temperature. If the air has a high relative humidity, carrying almost its capacity of moisture, by the time it reaches the top of the dryer the cold roof may cool it to a temperature at which the vapor capacity of the air is less than the amount of moisture actually contained in it and the result is that condensation takes place. This accounts for the dripping of water from the roofs of some drying sheds.

To prevent the above from occuring steam pipes are placed under each floor and some times just below the roof to keep up the temperature and thus prevent condensation. Another purpose served by these steam pipes is by heating up the air they make it lighter, causing it to rise to the roof and make its way out of the building, and hence prevent it forming a moist blanket on the upper floor which prevents proper drying taking place.

As has already partly been brought out another important principle in drying is to get the air into contact with the heated body to the greatest degree and bring it in contact with the ware to be dried. This is true because the air is a very effective means of carrying the heat from the source to the ware to be dried and, as said before, it also sweeps out the moisture.

Much of drain tile produced is dried in sheds which are heated by steam pipe and resemble to some degree sewer pipe dryers, or else the sheds are not heated up by artificial means but the tile are dried by natural air drying. In the former case the tile are placed on slatted floors which may or may not have steam pipes under each floor.

We are ready to understand some of the reasons why poor drying takes place in a drain tile or sewer pipe dryer, other than the tunnel type. One is that in many plants very little provision is made for proper ventilation. The moist air has no opportunity to escape and hence it becomes more and more saturated and less capable of holding any more moisture with the result that very little drying takes place.

Another point is that the temperature in the upper floors of the drying shed is often allowed to fall a great deal, with

the result that either no drying takes place or condensation results. The way to remedy this of course, is to put steam pipes under each floor, or if they are already there to increase the heat furnished.

A third reason for improper drying conditions and one that bobs up very frequently, is improper circulation. The fresh air should first become heated by coming into contact with the bottom steam pipes after which it should pass up thru the floors circulating about the ware and gradually working itself upwards at the same time carrying an increasing quantity of moisture, until it reaches the roof where proper provisions should be made for its escape. The tendency on many plants is to have insufficient openings for the moist air to escape. Another common mistake is that frequently the fresh air does not enter at a place where it can come into contact with the source of heat before it circulates about the ware.

* * *

Again, Thanks!

As an aftermath to the calendar and holiday greeting card harvest, *Brick and Clay Record* is pleased to take this opportunity to thank the Tuttle Brick Co., Middletown, Conn.; Geo. H. Clippert & Bro. Brick Co., Detroit, Mich.; Moberly Paving Brick Co., Moberly, Mo., and C. K. Williams & Co., Easton, Pa., for the beautiful and useful calendars which they have sent us. We are also in receipt of the best wishes for a happy and prosperous New Year from E. I. DuPont de Nemours & Co., Wilmington, Del.

COMING CONVENTIONS

Jan. 7 to 19—Short Course in Ceramic Engineering at the University of Illinois.

Jan. 17 and 18—Northwestern Clay Association, at Minneapolis, Minn. Headquarters, West Hotel.

Jan. 23 and 24—Iowa Clay Products Association, Des Moines, Ia.

Jan. 29 and 30—Sand Lime Brick Manufacturers' Association, at Buffalo, N. Y. Headquarters, Lafayette Hotel.

Jan. 29, 30, and 31—Canadian National Clay Products Association, at Toronto, Ont., Can. Headquarters, Prince George Hotel.

Jan. 31 and Feb. 1—Wisconsin Clay Manufacturers' Association, at Milwaukee, Wis. Headquarters, Republican House.

Feb. 10 to 16—National Brick Manufacturers' Association, at Indianapolis, Ind. Headquarters, Claypool Hotel.

Feb. 10 to 16—American Ceramic Society, at Indianapolis, Ind. Headquarters, Claypool Hotel.

Experiment means to find out. It's good up to a certain point—and then it becomes waste. Some concerns like puttering about in the matter of making belt joints. The majority have adopted

CRESCENT
BELT FASTENERS

as standard equipment. The story is interesting as a belting economy. Ask us.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue, New York, N. Y.

Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

Blasting without using the
CYCLONE DRILL
is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.

Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

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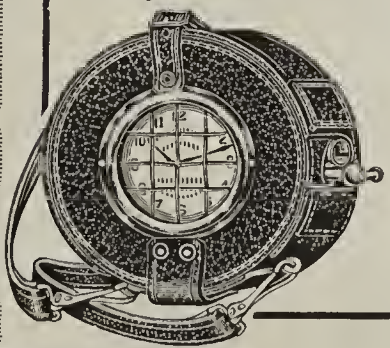
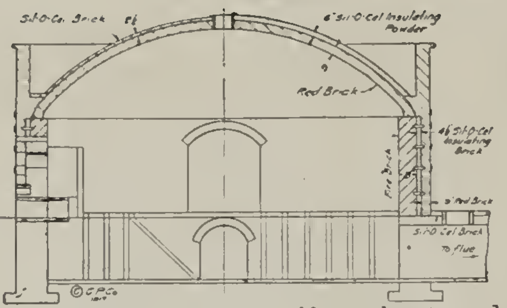
1760 Berteau Ave., Chicago, U.S.A.



INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH

SIL-O-CEL

INSULATING BRICK AND POWDER



Produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK, 11 Broadway
CHICAGO, Monadnock Bldg.
PITTSBURGH, Oliver Bldg.
LOS ANGELES, Van Nuys Bldg.
SAN FRANCISCO, Monadnock Bldg.

RINO GEAR SHIELD

It will prevent wear on your gears and pinions; if it prevents wear, it eliminates frequent replacements; if gears are replaced less, there will be fewer "plant shutdowns"—and that means steady running and profit. You had better investigate Rino.

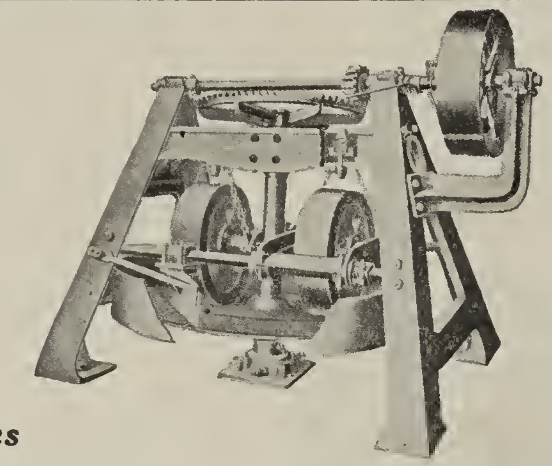
THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

QUESTIONS

A Three Cent Stamp May Bring You Advice That Will Stop a Waste, Improve Your Ware or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

A Steam Dryer Problem

844. *New York—How many feet of 1¼ in. pipe, or how many feet of one inch pipe, will be required to furnish heat in a brick dryer 101 ft. long, 5 ft. high, and 3.7 ft. wide, at a temperature of from 175 to 200 degrees, with a steam pressure of 8 pounds.*

To theoretically calculate the amount of pipe required for the above conditions would require from five to six hours of consecutive calculation. However, we have had a question similar to the one above sent to us in which we found by calculation that it would theoretically require three thousand linear feet of one inch pipe for each tunnel to supply the heat required. This would mean approximately thirty pipes. We have no data from actual practice on hand, from which we could answer, in a positive manner, the above question. Can any of our readers supply the desired information?

⁂

Dryer Lacks Heat and Ventilation

842. *Iowa—We are sending you a rough sketch of what we have been using chiefly as an air dryer, using only exhaust steam for heating purposes. Now, however, we wish to convert this building into a steam dryer. The building is sided with shiplap and covered on sides with rubberoid. We are running twenty-one one-inch steam pipes on each side of a four-inch header located about six feet above the first floor at one end of the building and another four-inch header in the basement at the other end of the building. A two-inch pipe drains this header into a return steam trap at the boiler.*

On the second and third floors which are made of one by four-inch slats spaced apart, we set the tile one stand high, or about 7000 four-inch tile on each floor. On the first floor we set our tile in stalls five stands high, twenty-one four-inch tile deep and six four-inch tile on each slat in stalls four feet wide. The only ventilation obtained is by twelve by twelve in. openings every eight feet in the comb of the roof.

The tile on the third floor dry fairly rapidly and as we approach the first floor it takes an increasingly longer amount of time to dry the ware. In fact, about twice as much time is consumed in drying ware on the first floor as on the third floor. Altho we have a tender surface clay, we are certain that it will stand rapid drying because we have a floor over our machine room on which the tile are dried in four days.

To all appearances the cause for the slow drying encountered on your plant is insufficient heat and ventilation. From the description given in your letter, we are of the opinion that very little of the air which does circulate thru the building comes in contact with the steam pipes because they are located in a position where the air does not have easy access to them.

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

This condition should be improved so that all fresh air would pass thru the piping before it enters any other part of the building. Since only exhaust steam is now used it may be possible that the air is not sufficiently heated to aid appreciably in drying and therefore we would suggest that you increase the temperature maintained in your dryer. We do not believe that you require any more piping to do this than what you have at present.

Since you have a roof area of approximately 1,800 square feet and openings in the roof equivalent to only eight square feet, we believe that an insufficient amount of air is unable to escape in a given time. By constructing additional ventilators, better circulation will be created and drying will take place with greater rapidity. Some of these ventilators might be constructed between the center and edge of the roof.

⁂

Cleveland Considers Municipal Housing

With a view toward providing adequate shelter for the vastly increased workman population of Cleveland, Ohio, ordinance for the passage of $1,000,000 bond issue, the money to be used in housing construction, is now before council in that city. The plan is proposed by Councilman John M. Sulzman, who would have these houses built on land already owned by the city, and he would rent the houses for a sufficient sum to pay the interest on the bonds and retire them at maturity, forty years. The measure provides for the appointment of a committee of five citizens who would act with the mayor in carrying out the project. About five hundred houses are planned for in the project, these to rent at about $17 each, thus covering the four per cent. interest charges, as well as to provide about $52,000 for the sinking fund.

⁂

Von Oven in the Limelight

There has come to the Editor's desk a very neatly compiled and exhaustive book entitled, "Naperville," which has been published as a souvenir of the Naperville (Ill.) Home Coming, held during the first week of June, 1917. Naperville, it will be remembered, is the habitat of our aggressive friend, Fred W. Von Oven, that active member of the Illinois Clay Manufacturers' Association who has contributed so freely to the constructive work accomplished by that association in the past several years, and who is now so active in the work of the drain tile division. Mr. Von Oven's picture appears in two places in the brochure, one showing him as president of the Association of Commerce of that city, and the other grouping his picture with those constituting the General Committee, which fostered and was responsible for the success of the home coming.

Send for a Can Today

Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

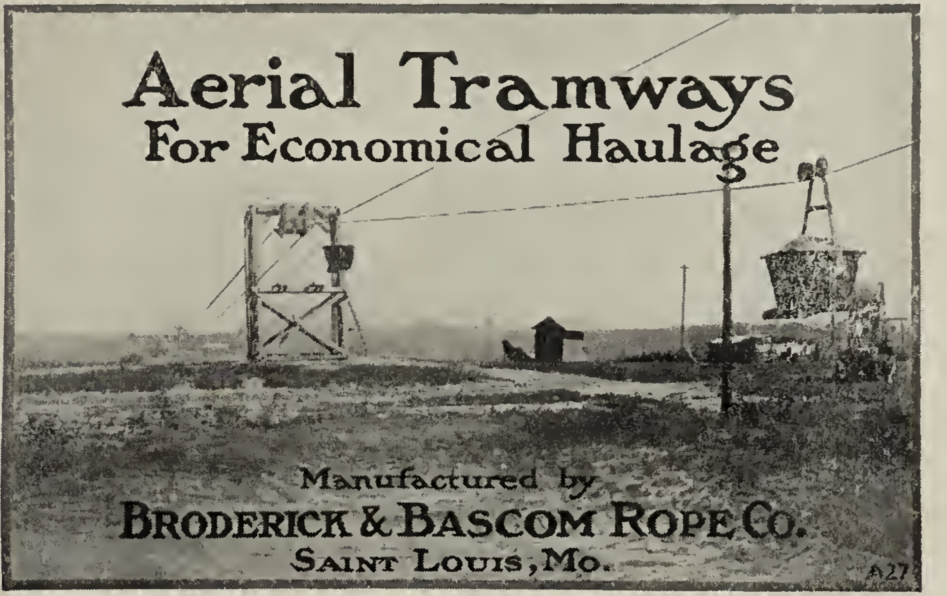
"SERO" Belt Dressing

makes them efficient

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.


Aerial Tramways
For Economical Haulage

Manufactured by
BRODERICK & BASCOM ROPE CO.
SAINT LOUIS, MO.

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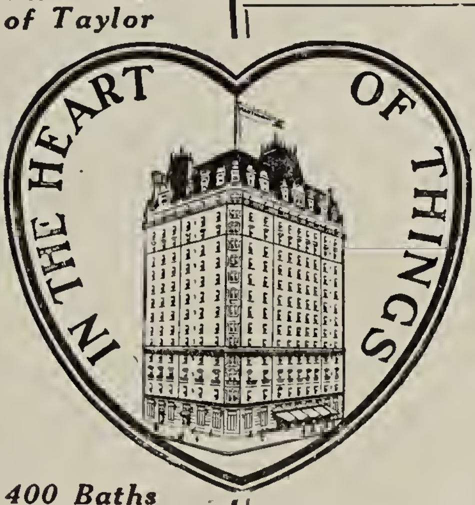


IN THE HEART OF THINGS
The House of Taylor

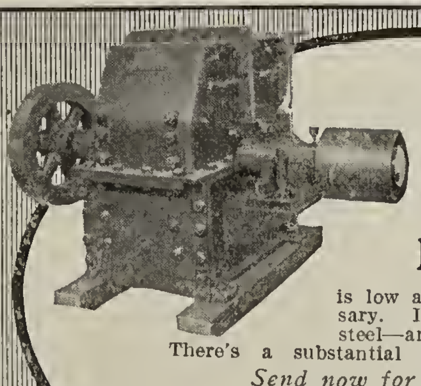
Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day

Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate

400 Baths
600 Rooms


An investment that stands

The initial cost of a
K-B Pulverizer
is low and covers about all the outlay necessary. It is built throughout of high grade steel—and is practically indestructible. There's a substantial saving in power costs as well.

Send now for catalog with interesting
There's a substantial saving in power costs as well.

K-B Pulverizer Company, Inc.
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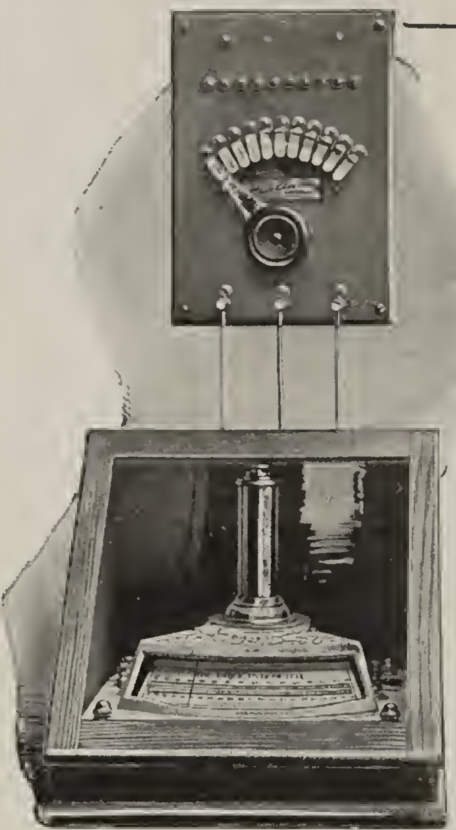

Snow Capped Kilns

Cause the temperatures to fluctuate. The Electric pyrometer is the best known way to detect the least variation. This knowledge saves you money, for it produces better ware at lower cost.

PRICE PYROMETERS

Are Accurate and Rugged—and Cost is Moderate

The Price Electric Company

12367 Euclid Ave. CLEVELAND, OHIO

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company

100 William Street New York

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Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

J. How, formerly with the Don Valley Brick Works, of Toronto, is reported wounded in France. He has been admitted to the 11th Field Ambulance Hospital.

Henry Clements, manager of the Cannelton (Ind.) Sewer Pipe Co., has been a very busy man during the past month. In addition to looking after his own business he has been acting as fuel administrator for Perry County.

Fred W. Schumacher, formerly associated with the Refractory Magnesite Co., in San Francisco, Cal., recently severed his connection with that company to become affiliated with E. W. Cutter in the storage battery business at Sacramento.

Former Ohio State Highway Commissioner Marker, and now of the Ohio Paving Brick Manufacturers' Association is boosting the plan of having the federal government build military roads to parellel railroad lines in order to relieve congestion.

George Last, a pioneer brick manufacturer residing in West Jordan, Utah, died at his home recently at the age of seventy-six years. He was born in England in 1841, but came to America in 1882, settling in West Jordan, where he has operated a brick plant ever since.

George J. Jervis, formerly with Fiske and Co. Inc., New York, was a recent visitor at *Brick and Clay Record's* offices. Mr. Jervis has abandoned his more peaceful pursuit of designing brick fire places to take up a position in the Navy Department at Washington, where he is doing his "bit" in "getting" the Kaiser.

David Duff Seerie, vice president and treasurer of the Denver (Col.) Sewer Pipe and Clay Co., died recently at the age of fifty-five years. He was born in Scotland and came to Denver in 1880, where in 1885 he formed a partnership with William F. Geddis which was dissolved only by Mr. Seerie's death.

George Chambers of the Peterson Kartschoke Co., who was recently elected chairman of the newly formed branch of the Clay Products Association, is paying more attention to bootleggers than he is to the tile and terra cotta business, just at present. It is not Mr. Chambers' fault that he is neglecting his business, but thru one of Uncle Sam's lotteries he was chosen to serve on the Federal Grand Jury, and he is "cheerfully" obeying the call of his country.

Charles Spikings of the Reliance Brick Co., Kansas City, Mo., was in Chicago the other day visiting with Wm. H. Gifford, manager of the brick department, Wisconsin Lime and Cement Co. "Spike" often "blows" into the Windy City, and so it was not a surprise to find him in deep consultation with "Giff." The Reliance Brick Co. is a selling agency for face brick, and in addition to its Kansas City headquarters, has offices in Tulsa, Okla., Wichita, Kan., and Des Moines, Ia.

California

The Richmond Pressed Brick Co., of Los Angeles, Cal., has had a most prosperous year and is making extensive improvements to its plant. When these are concluded the plant's capacity will be greatly increased.

N. Clark & Sons are still clearing up the debris from the fire which attacked their plant several months ago. Mr. Gwynn says that the ground will be cleared by about the first of February, and soon thereafter the company will begin to rebuild its plant. With the Clark plant out of business, there has been plenty of work to keep the other tile men busy. By the time this plant is ready for operation the trade is confident that the demand will have increased enough to take care of its output on a normal basis.

The unusually dry season to date in California has had the effect of encouraging some building that a normal winter would have postponed until spring. This has now all been completed and the brick men are wondering what they are going to do to keep busy during the next few months. The general building situation here as elsewhere in the United States is adversely affected by the conditions arising out of the war. Nothing big is under contemplation for immediate undertaking, and the industry is busying itsself in closing up the work which was contracted for some time ago. Notwithstanding this somewhat blank outlook a feeling of optimism prevails, for it is generally believed, as one brick man expressed it, "Either the war will come to an end during 1918—or we will get used to it." In either event, he said, business will become more normal. Building operations in which brick was employed were unusually active during the months of November and December, due, of course to the open winter. Nevertheless, the official reports of building permits for those two months were less than any other months of the year. San Francisco building permits for December were only $481,818 and for November they were $557,503. The contradiction of good business reported by the brick men and the low figures shown by the building permits is explained by the statement that most of the business done has been on government contracts, and since October the government has not permitted such figures to be published. This explanation is supported by the fact that other coast cities, in which the government has been doing a considerable building, show a like serious falling off in permits, while other places like Sacramento for example, where there has been no government work, show normal number of permits. In Sacramento the amount of the building permits were exceeded by only three months of the entire year.

Colorado

The Montrose (Col.) Brick and Tile Co., are planning to operate day and night next summer in order to manufacture sufficient brick to supply what now appears will be a boom in big buildings. It is also expected that there will be a greater demand for drain tile than ever before.

The Standard Fire Brick Co. of Pueblo, Col., has installed a new system which will conserve between 5,000 and 6,000 tons of coal a year. This is accomplished by saving the waste heat from the hot kilns and conveying it to the boilers where it is used to generate steam for operating the plant.

Illinois

The Illinois Brick Company of Chicago has declared a regular quarterly dividend of one and one-half per cent., payable January 15.

"SCANDINAVIA"
(Solid Woven Cotton Belt)

is the kind of belt that gets the preference from those clay-products manufacturers who are most particular about knowing the exact cost of operation in every detail.

"Scandinavia" always shows up so well when the manager looks over the cost figures that there never is any question as to the belt that will always have the preference.

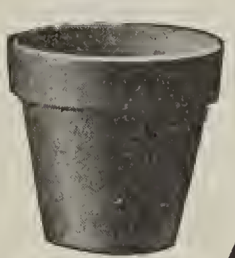
"Scandinavia" is the belt for you to use for power transmission—elevating and conveying.

Try it once and you'll be convinced

Scandinavia Belting Co.
106-108 Reade Street, New York

Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.

Canada: Federal Engineering Co., Limited, Toronto and Montreal.



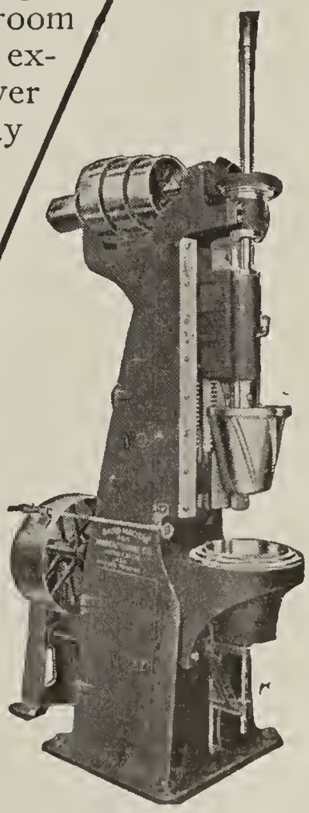
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



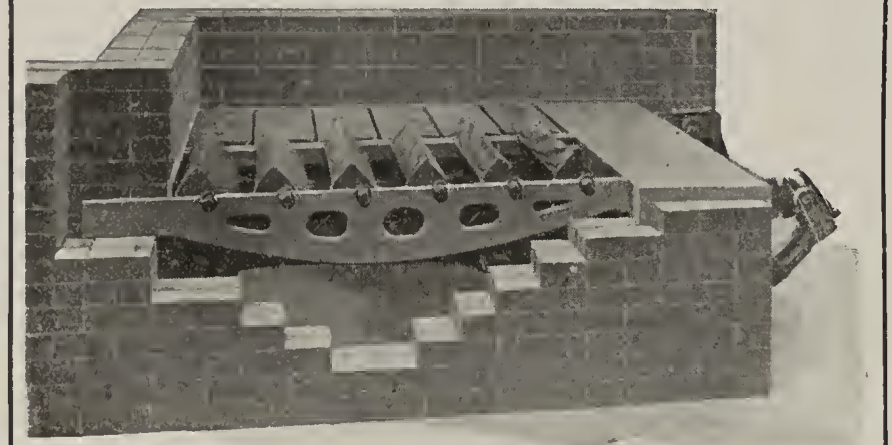
Cyclone Grates

—are actually saving from 10% to 25% of former coal tonnage used.

If you do not investigate—the fault of a continued 10 to 25% loss is on your own shoulders.

We absolutely guarantee 10%, it usually is more. Ask for full explanation and our easy terms.

Cyclone Grate Bar Company
Buffalo, N. Y.

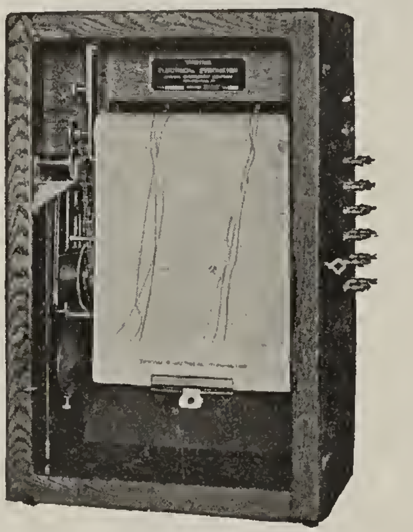


Stop 'leaving it to George'

Conscription is showing up the fallibility of old-fashioned hit-and-miss methods of heat control.

When the one man who knows—who keeps the records 'in his head'—is called to the flag quality and output are due to suffer.
Thwing Pyrometers by permanently recording those conditions which give best results, act as a check and trustworthy guide for future work. They make possible the reproduction of ideal conditions for any desired process regardless of changes of personnel.

Isn't that a good argument for using Thwing Pyrometers in your work? As a war measure as well as a matter of good business, ask us to tell you how they can be applied in your plant.



Catalogue No. 8 is yours on request.

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS
THWING INSTRUMENT CO.
3336 Lancaster Ave. Philadelphia, Pa.

Among those in Chicago who donated toward the recreation camp fund of the Knights of Columbus recently are listed the "Brick Manufacturers, $1,000."

The American Floor and Wall Tile Co. is a new concern listed among Chicago corporations with a capital stock of $2,500. The incorporators are O. W. Jurgens, Samuel Z. Lineus, and Arthur E. Wallace.

The Monmouth Clay Manufacturing Co., and the Western Stoneware Co., of Monmouth, Ill., were among the firms contributing money or material toward the South Third Street improvement in Monmouth.

A parcel of approximately seven and one-half acres of land, being 631 by 50 ft in area, lying on the west shore of Lake Calumet, at Kensington Avenue, has been purchased by the Illinois Brick Co. from the Pullman (Ill.) Land Association for an expressed consideration of $30,000. The property will be used for manufacturing and yard purposes.

The Heckard Brick plant of Canton, Ill., finished burning their last kiln of brick recently and closed the work of one of the longest seasons they have ever had. The plant would have been operated longer, but owing to the fact that no cars could be obtained in which to ship their product, and since a large reserve supply had been gathered, the company decided to stop work for the season.

Indiana

Building operations in Evansville, Ind., showed some signs of picking up during the month of December and fell only about $3,000 short of the permits for December of 1916. In the opinion of the brick manufacturers in Evansville there will be some picking up in building next spring.

It is expected that Benjamin Bosse, mayor of Evansville, Ind., and president of the Dixie Bee Line Highway Association, which proposes to build an improved highway from Danville, Ill., to Adams, Tenn., will call a meeting of the association within a short time to talk over plans for the future. Some of the road has already been built, a part of the highway in Knox County, Ind., having been constructed of brick.

G. C. Landgrebe, general manager of the Huntingburg (Ind.) Pressed Brick Works, announced a few days ago that he had closed a contract with the government for a shipment of one million brick to Jeffersonville, Ind., to be used in the construction of a government supply depot at that place. Mr. Landgrebe says he expects to close another large contract with the government within a short time. The company is operating its plant to capacity and is doing a prosperous business. The Southern Indiana Clay Products Co., at Huntington, Ind., is also doing a nice business and recently sold a big consignment of brick to New Albany, Ind., to be used to build a fire station to take the place of the one that was wrecked a little less than a year ago by a tornado.

Kentucky

Kleymeyer & Klutey, brick manufacturers at Henderson, Ky., have been placed on the roll of honor of the Red Cross, as all the members of that firm and all of their employes have taken out memberships.

The Tyler Building Supply Co. of Louisville, Ky., reports thru Leo M. Parsons, secretary, a recently booked order for 350,000 common brick for the Louisville Milling Co. for an addition to its flouring mill, which is going to make the so-called war-flour. The company has been selling some orders for face brick to several small operators, altho there is not a great deal of this kind of activity.

The P. Bannon Pipe Co. of Louisville, Ky., is away behind on fire-brick orders and the operations at the plant are being pushed to capacity. A. P. McDonald, salesmanager of the company, has been ill at his home for about two weeks, suffering from a touch of the grippe. He will be out shortly, in plenty of time to catch up with the business which is accumulating for the first of the spring rush.

Louisville sportsmen have resumed their campaign to raise a fund of well on toward half a million for the erection of an athletic club building in the city. The movement was well on its way toward success when the United States entered the war. At that time it was determined to drop the campaign. Now, on advice of good patriots and good business men, it has been determined to renew the drive.

Under the new City Building Inspector of Louisville, W. E. Glossop, a rule in effect is that detailed plans for all new buildings must be left with the building inspector at least one week before permits for beginning of construction work can be issued. It is proposed that the new inspector's office will very thoroly go over the plans and approve only those which are fully in accord with the code.

The plant of the Southern Brick & Tile Co. of Louisville, Ky., has been shut down for repairs which are nearing completion and operations will be resumed as soon as the weather permits. Labor costs have gone up sharply in the Louisville market, it was noted at the offices of the Southern company, the brick manufacturers having to compete in the market with other employers who have use for labor of much the same class.

How many brick the Louisville (Ky.) Fire Brick Co. manufactures depends on what the company can get in the way of cars to carry them, and the storage capacity at the plants. The company is adding constantly to the stock on hand for the simple reason that cars cannot be had in sufficient number to take care of more than about 60 per cent. of the product. The fact that the government has taken over operation of the railroads has not as yet served to relieve the shortage in this direction, altho there is always hope and the certainty that the government could hardly do anything to make matters worse than they have been. J. H. Bell, sales manager of the company, said that all indications pointed to a 1918 every bit as strenuous as 1917 was. Nothing like a let-up is in sight.

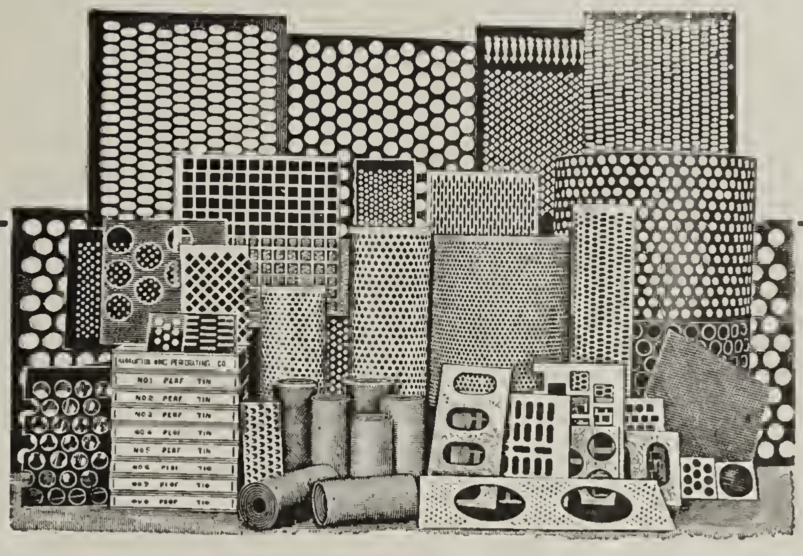
Looking forward into the spring the Kentucky brick and building material trades are counting on the largest part of their volume of business from the country districts. The farmer is the man who has been getting the big share of the war-prices prosperity and who is now in position to give himself some of the improvements he has long wanted. That he is doing so even now in the middle of the winter is indicated by the reports of concerns shipping building materials to three or four states from Louisville. Orders are numerous and, altho mostly for materials which at this time of the year are other than brick and clay products, indicate that when the season opens the farmer will be in the market for brick and hollow tile if not for other clay products for his buildings, and drain tile for his fields. Inquiries received by Louisville houses suggest this also and a number of the concerns which have been looking mostly to local business are now figuring on means by which they can get in touch with the farmers in the section, so as to work up and then supply the demand for structural materials.

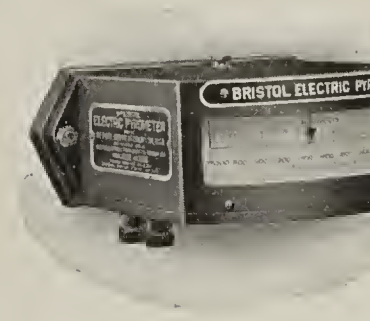
Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand,
Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity,
Durability and Satisfaction

The Harrington & King Perforating Co.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.





Accurate Records of Kiln Temperatures

Every fluctuation in temperature, and when the fires were started and stopped is plainly recorded by

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
PYROMETERS

The recording instruments may be installed in the manager's office or other convenient point where they are protected from dust and dirt.

At the kilns a set of Bristol Indicators show the men at all times what temperature they are getting inside of the kiln.

The superintendent can detect any inefficiency by a glance at the charts and knowing this stimulates the men to do better work.

Write for Bulletin 205

THE BRISTOL CO., Waterbury, Conn.

Please Note

"Quality As Usual"

And Quick Action

You know what steel and iron market conditions are like. Judge then the importance *to you* of the following facts:

FACT 1—The extreme high quality of The Standard Brick Drying Equipment before the war is being strictly maintained in spite of present conditions.

FACT 2—We are ready with a large stock of this high-grade material and can make prompt shipment of complete drying equipment.

Let us know your requirements.

The Standard Dry Kiln Co.
1540 McCarty Street
Indianapolis, Indiana

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio
Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

New Jersey

New Jersey customers of the Humphrey Brick & Tile Co., Brookville, Pa., and Peter Stipp & Sons, Scranton, Pa., received very attractive holiday greeting cards from these firms. The spirit expressed was very impressive.

In the appropriation of $32,000 made by the Trenton (N. J.) Board of Works for new paving this year about one-third is to be brick. New Brunswick does most of its paving with brick. For years successive boards of works have specified brick whenever the question of paving was up for consideration. Newark still holds to some of its brick pavements and its outlying towns use more or less of it.

Twenty-three permits for buildings were granted in Paterson, N. J., in December, 1917, which had a value of $15,873, compared with 62 permits for December, 1916, valued at $341,893, a reduction of $326,020. During the year ending December 31, 1917, there were 1,016 permits issued for buildings valued at $1,597,828. The total number for 1916 was 1,164 for buildings, valued at $2,347,745, a decrease of $749,917.

New Jersey's allotment of the 15,000 bricklayers General Pershing wants in France will number forty. These are to be selected by the various draft boards of the state and will be sent to Kelley Field, at San Antonio, Texas. For some reason which does not appear in the orders a number of these bricklayers will be assigned to the aviation section of the Signal Corps which caused an alleged funny man to inquire if they are needed to build castles in the air.

Ohio

The capital stock of the Nicholson Clay Products Co., of Cambridge, Ohio, has been reduced from $100,000 to $50,000.

The Claycraft Brick Co., of Columbus, Ohio, has suspended making face brick and has turned the plant at Shawnee, Ohio, over to the manufacture of fire brick.

The National Paving Brick Co., of South Zanesville, Ohio, has been re-incorporated and will henceforth be known as the Central Ohio Brick Co. F. M. Schimps, of Newark, Ohio, has assumed the position of treasurer and general manager, and the office of the company will be located in the Peoples Bank Building, at Zanesville.

Plans are practically complete for the Columbus, (Ohio), Real Estate and Building Show to be held January 21 to 31 inclusive. Because of freight congestion four car loads of exhibits have already arrived and others are on the way. The exhibitors did not want to be caught in the slow freight movement. Indications point to a huge success for the undertaking.

A letting of bids by the Ohio Highway Department early in January provided for several brick paving jobs. The highway department expects to have another letting soon and some of the proposed jobs will be brick paving. Several of the cities and towns thruout Ohio are also preparing to award brick paving contracts, to be started early in the spring.

A land contract has been executed and filed for record by John H. Watson of M. B. and H. H. Johnson's office of Cleveland, Ohio, for the Barkwill-Farr Co., Leader-News building, on a parcel of land approximately twenty-five acres on Reeves Ave., S. E., adjoining the proposed right of way of the B. & O. railroad. The land is owned by Mary S. Cullen and others. The consideration in the deal which includes equipment, involves about $45,000, according to the contract.

Dividends for the whole year of 1918 were declared at a meeting of the American Sewer Pipe Co., held recently at Akron, Ohio, notices of which have been forwarded all stockholders. The directors adopted this resolution: "Resolved that the regular dividend of $2 per share be declared out of the earnings of the company for the fiscal year ending November 30, 1917, payable quarterly at the rate of fifty cents per share on the following dates: March 20; June 20; September 20, and December 20.

The annual meeting of the Builders' and Traders Exchange of Cincinnati, Ohio, will be held here on January 14. A new constitution will come up for consideration and the term "Traders" will probably be dropped as this appears to be foreign to the organization. A number of other new ideas are to be offered, one of which is that a board of control be appointed which can handle all business matters. If the new constitution is adopted it is very likely that a campaign for new members will be inaugurated and the organization made to become a larger factor in the building industry.

Freight conditions on the railroads in Ohio have improved somewhat since the first of the year and as a result manufacturers of face brick are looking forward to an awakening of the industry. For the past few months it has been almost impossible to make shipments and the result is that many of the face brick plants of the Buckeye state have been closed down. Another factor was the inability to get coal. But with the government taking over the railroads, it is believed that some improvement will result. While orders for face brick are not numerous still there is some business moving where shipments can be made. So the prospects are brighter than have been the case for some time.

The report for the year ending December 31, 1917, of Building Commissioner George E. Rendigs, shows that the past year was not a very bright one for the building industry in Cincinnati. Compared with several years previous the showing was very unfavorable. The number of permits issued for the year of 1917 were 12,175, for buildings valued at $10,451,315; for 1916 there were issued 15,887 permits for a total cost of $10,842,895; and for 1915, 16,049 permits for buildings costing $14,025,333. Even the month of December just passed, was poor. There were only 616 permits issued for work to cost $188,333; for December, 1916, there were 947 permits issued that amounted to $998,345. The reasons that have been assigned for the decrease in building construction are war and the high cost of materials.

Pennsylvania

The River Stone & Brick Co., Uniontown, has been incorporated with a capital of $30,000 to operate a local plant. Leopold Sigwart is the principal incorporator.

The Standard Refractories Co., of Claysburg, Pa., has closed a deal for three tracts of land in Wrightsville borough and the one adjoining it, comprising 327 acres. It is expected that this company will erect a large plant for the manufacture of its product, along the Susquehanna River near York, Pa. The company is conducting a quarry operation on the Lancaster County side of the river for material which is used in the manufacture of its fire brick.

SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

They Carry
from 4 to 6 wheelbarrow loads, at three times the speed of a man pushing a wheelbarrow.

Elwell Parker Electric Elevating Platform Trucks
are Clay Plant Necessities

If you would save men, put in good runways and get these Trucks.
They are doing remarkable clay plant work.
Get our catalog.

The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

Your Fortune For Coal Or Use Canton Shaking Kiln Grates
Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.
Get our bulletins.

The Canton Grate Co.
Woodland Ave., Canton, Ohio
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Efficiency Engineers
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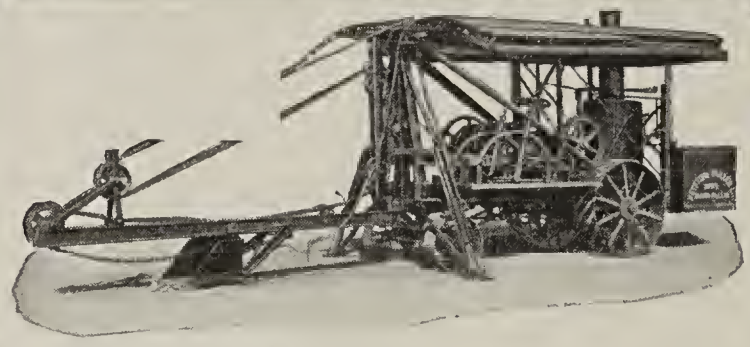
Atlanta, Ga.

ROLLIN'S
BARIUM
CARBONATE
PREVENTS
SCUM

Add it at the pug mill, or perhaps at the dry pan—it makes the scum-producing salts insoluble—the ware comes out of the kiln with a clear skin—it is, and always will be, saleable. In sewer pipe clays it makes the salt glaze—stick.

THE ROLLIN CHEMICAL COMPANY
INC.
CHARLESTON WEST VIRGINIA
The National Aniline and Chemical Company
of 244 Madison Ave., New York
General Sales Agents

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

North Carolina

The Bennettsville Brick Co., of Florence, S. C., was recently given its charter by secretary of state W. Banks Dove. The capital stock of the concern is $25,000 and the officers include Lincoln S. Morrison, president and treasurer, and J. B. Morrison, vice president and secretary.

Tennessee

Reports of the city building inspector of Knoxville, Tenn., show that building permits for 1917 were $1,271,758 comparing with $625,000 for the year before. The increase is said to be largely due to the fact that last year wiring, plumbing, and other costs were included for the first time.

Utah

Manager Wm. R. Deppe of the Smithfield (Utah) Brick and Tile Co., reports having manufactured approximately 1,750,000 brick during the past year. About 40,000 feet of drain tile and 100,000 building tile were also manufactured during the year.

Vermont

The Rutland (Vt.) Fire Clay Co., is installing two new boilers for its plant thus increasing its power capacity from seventy-five to one hundred and twenty-five horse power. This concern recently held its semi-annual get-together meeting after which the salesmen of the company started on their respective routes.

Canada

The Vandorf Brick Works, Ltd., Toronto, has been incorporated with a capital of $40,000 to manufacture brick, tile, terra cotta and pottery.

The Dominion Sewer Pipe Co., of Sawansea, has been awarded the contract for the supply of sewer pipe for the city of Toronto, for 1918.

The Dominion Shale Brick & Sewer Pipe Co., Ltd., operating a big plant near Nanaimo, B. C., recently made an assignment for the benefit of the creditors. The trouble was brought about by the depression in the building trade caused by the war.

Under the Winding-Up Act, the property of the Ontario National Brick Co., at Cooksville, Ont., is to be sold at public auction on January 22. This includes clay deposits, brick plant, office and factory equipment. Since war broke out building has fallen off and this move has been made necessary.

The appeal of the defendents in the Taylor vs. Davies case was upheld by Sir William Meredith in a recent judgment handed down by the Second Appellate Court. Mrs. Isabella Taylor, wife of William Taylor, who won at the trial of the one or two million dollar action brought against the Robert Davies Estate, and Assignee E. R. C. Clarkson, lost her case, when the court allowed the defendents' appeal, reversed the trial judgment of Mr. Justice Lennox and dismissed the action. The case may be taken to the Privy Council. In 1902 Robert Davies had a claim for $100,000 against the Taylor Estate and agreed to take over the Don Valley Brick Works, said to be worth a million or more now, at a valuation of $45,000, in full of this claim. The value has been greatly increased since then.

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

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Problems Confronting Potters for Solution

Just at the opening of the new year, pottery manufacturers have admitted that inability to obtain steady supplies of raw materials, salient in mixing bodies, is a a matter that cannot be passed over with a laugh and a smile. As an illustration, the matter of obtaining raw flint by milling corporations is growing to be a very serious problem. One grinding corporation in East Liverpool, Ohio, has obtained a government permit for the movement of forty cars of flint sand from a shipping point in Pennsylvania, but the shippers are unable to obtain cars for loading. Unless a large supply of flint sand is soon obtained by the milling concerns, there will be no ground flint to fill the orders of the pottery manufacturers. It is quite impossible to manufacture pottery without flint, and it is here that a very serious problem is confronting the trade.

Another phase of the situation now confronting the manufacturers and pottery buyers as well, is the inability to obtain casks and other built-up packages to ship finished products. Coopers and cask manufacturers in the eastern Ohio territory are unable to obtain any reasonable shipments of staves. The coopers have had to pay recent advances to their labor, and their lumber has also advanced. This has caused the package manufacturers to advance their selling list ten per cent. within the last few weeks.

DECALCOMANIAC IMPORTATION STOPS

In decorating pottery, a very serious problem facing the manufacturers will be the shortage, from present indications, of material that has been imported in the past, altho no small volume is manufactured in the United States. However, all duplex "decal" paper is imported, coming from England. These paper manufacturers are unable to supply the demand on account of not being able to obtain raw materials. Shipments of this plain paper received here is divided among "decal" manufacturers in the East and Chicago districts, but still they are short of requirements.

Still another interesting phase of the situation in the pottery industry is the inability of manufacturers to make deliveries of finished ware. This is due to the numerous embargo orders now in effect. Thousands of packages of pottery have been packed and marked for shipment in the East Liverpool, Sebring, East Palestine (Ohio), the Newell and Chester, W. Va., districts, but none can be started forward. When shipments can be made, a shortage of cars exists. When the embargo is lifted on this or that point, it frequently happens that before a shipment is delivered at a freight station, announcement is made that the "point is closed." It will require a mint of money to operate potteries and pack shipments, if none can be shipped, for it is thru the door of the packing shed that pay rolls are sent around to the front door.

While there has been a shortage of workmen in the domestic pottery district, the potteries as a rule operated,

Tycos
TEMPERATURE INSTRUMENTS
Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
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Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
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Urinary Glassware.
Thermometers of all kinds for home and general use.

Tycos RECORDING PYROMETER

Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient Tycos aids.

Taylor Instrument Companies
ROCHESTER, N. Y. 67

We own and have the exclusive right to sell

Webster's
Improved Continuous
Kiln

It has improvements over all other kilns, that we believe to be of exceptional value, particularly in producing great coal savings.

We have, in addition, permission to sell the machinery and equipment of some of the best machine houses catering to the clay industry.

Therefore our line is complete—and with it all we offer an interested and skilled service.

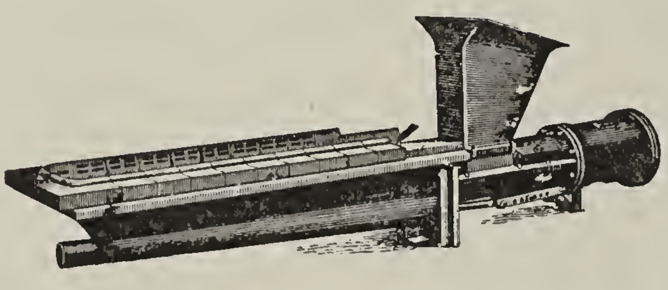
We will be glad to explain the merits of kiln and combination machinery line.

Webster & Kincaid
407 Greenwood Bldg.
Cincinnati, Ohio

A Timely Message

The manufacturer of brick and other clay products, like any other manufacturer, is obliged to watch carefully his operating costs and to protect himself against the constant advances in the cost of all supplies used in the manufacture of his product.

Fuel is one of the big items of expense, and in order to keep fuel costs down to a minimum he should install equipment in his boiler room which will burn economically the cheaper grades of bituminous coal.



THE JONES UNDER-FEED STOKER

offers many advantages and should be installed for the following reasons:

1st. The cheaper grades of bituminous coal can be burned economically a maximum efficiency, assuring a minimum cost for fuel.

2nd. The boiler capacity can be materially increased.

3rd. Even steam pressure is assured, because of the mechanical control of the fuel and air.

4th. There are no moving parts in the fire, assuring low maintenance.

5th. Smoke is abated.

6th. The stoker "pays for itself and then pays dividends."

Smoke abatement (Reason 5) means fuel saving, and as complete combustion takes place in furnace, waste gases can be used in connection with driers without fear of sooting the ware.

Our illustrated booklet No. 50 contains data of real interest to manufacturers of brick and other clay product plants—sent on request.

The Under-Feed Stoker Co. of America

General Offices—Harris Trust Bldg.
Chicago, Illinois

BRANCH OFFICES IN THE FOLLOWING CITIES:

New York
Pittsburgh
Philadelphia
Boston
Buffalo
Cincinnati
Toronto
Minneapolis
Milwaukee
Kansas City
Denver
Detroit
Toledo
Salt Lake City
Charlotte
New Orleans

generally speaking on about a seventy-five per cent. basis during November and December, or since the settlement of the potters' strike. At no time during 1917 did pottery manufacturers operate to capacity. Now comes the approach of another Federal draft, and this is causing the manufacturers to wonder how many of their workers will be called into the service. No denial is made of the fact that if the general ware pottery manufacturers had more mechanical devices in operation in their plants, the shortage of labor would not be felt so keenly. Reference has been made by manufacturers to the continuous kiln, which if installed generally, would eliminate hundreds of kilnmen and kiln drawers from the trade, and production would be almost doubled in this particular department.

NEW CONSTRUCTION IMPROBABLE

Because of existing conditions, there is not likely to be any increase in the kiln capacity of the domestic pottery industry during the coming year. Conditions are not favorable to new construction for several reasons, one being the probable inability to obtain sufficient help, and the other the high cost of building materials. Less than six new kilns were added to the industry during last year, altho one new plant was placed in operation, but was completed late in 1916.

An unusual demand exists now for hotel ware for government purposes. Much ware that has been made up by manufacturers in all potteries for their regular customers is being diverted into government channels. Some trouble is being experienced from time to time, however, in making shipments after such orders have been packed, but this is a matter that the carriers will have to answer for.

Selling prices of domestic pottery will remain normal, for the present at least. Should manufacturing costs increase and production lowered, there is reason for believing necessary advances will have to be made to cover existing overhead charges. That general conditions in the domestic pottery trade are just a little abnormal is the opinion of all in close touch with the situation.

The Bellmark Pottery Co., of Trenton, N. J., was recently sold to the American Sanitary Works, of Washington, for approximately $150,000. The factory is very busy on general work and has sufficient orders on hand to keep it running for a considerable time in the future. B. D. Tilden, the principal owner, is making a tour of the Pacific Coast and will visit Honolulu before he returns. F. A. Wilkie, secretary of the company, is in charge during Mr. Tilden's absence. The former owners of the plant are all in the service of the United States Government. Extensive improvements to the plant are contemplated.

It is stated that the new Rookwood soft porcelains now on exhibition in the galleries of Goupil & Co., of Paris, are among the handsomest ever turned out by these famous kilns. There are some blue and green pieces in particular, the colors laid on in splashes that give an impressionistic effect of foliage, that are an especial success. A number of single color pieces are also being shown, the tones including canary, celadon and pastel pinks, browns, and blues.

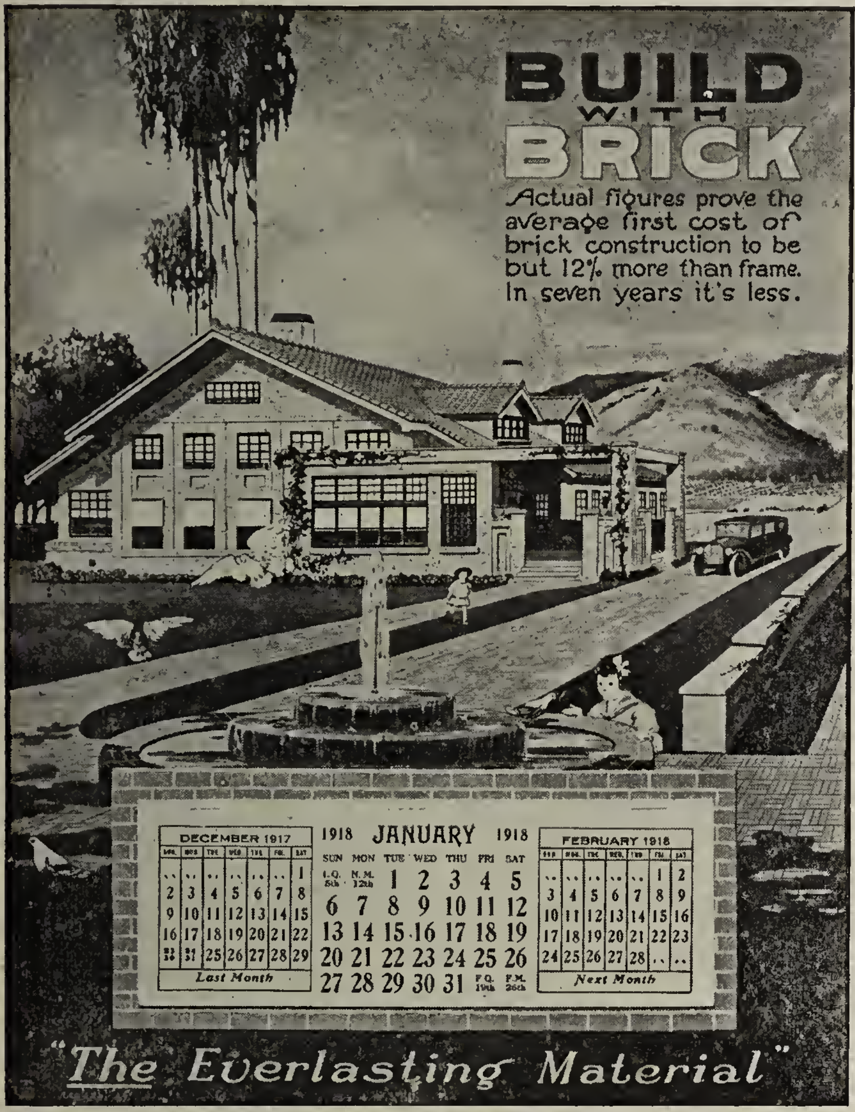
In order to encourage the economy of food in England, one of the largest potteries is now turning out jugs, plates, sugar bowls and cups of reduced sizes. Upon these are inscribed legends autographed by men of eminence, beginning with Lloyd George, in which the need for food economy is stated.

The Argo Tile & Pottery Co. has been incorporated under the Massachusetts laws to manufacture clay products. The works are to be located at Everett, Mass. The concern starts business with a capitalization of $15,000. The incorporators were Maxwell A. Metzner, of Watertown, and Henry S. Ormsby, of Jamaica Plain.

* * *

New Association Distributes Calendar

A neat calendar printed in various colors which bring out the beauty of brick is that distributed by the newly organized Clay Products' Association of which P. M. King is secretary, and whose offices are located in Los Angeles, Cal. One of the features of this calendar is the short but forcible statement of the economy of brick construction, which appears in the upper right hand corner. A calendar of this type should do much to increase the popularity of brick as a building material.



BUILD WITH BRICK

Actual figures prove the average first cost of brick construction to be but 12% more than frame. In seven years it's less.

DECEMBER 1917						
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Last Month

1918 JANUARY 1918

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FEBRUARY 1918						
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Next Month

"The Everlasting Material"

* * *

Cleveland Sets New Paving Record

The Engineers' Committee of the Cleveland Engineering Society, appointed by the Civic League, Cleveland, Ohio, to supervise the paving of that city, reports that $2,000,000 street improvements, the largest amount in the history of the city, was done during 1917. Significant suggestions included in the report for the coming year are: Employment of more engineers at better pay, to make for better service and therefore greater economy; systematic training of paving inspectors in methods of construction, and better pay for them; more rigid enforcement of contract specifications and completion of underground improvements before new paving is done.

"Ordered Today — Shipped Today! — that's what we call SERVICE," says 'On-the-Job' GANDY.

GETTING *GANDY* Belts where-you-want-'em-when-you-want-'em is just as much a part of *GANDY* business as the making of its famous *original stitched cotton duck product.*

The same day your order comes, *that* day it is filled from the big ready-for-shipment stock of well seasoned *GANDY* power and conveyor belts.

Regular and odd size *GANDY* Belts may be obtained from the principal jobbing points throughout the country as well as from the home plant.

If in doubt as to width or ply required, our Engineering Department stands ready to advise you.

Caution — Get your belting orders in at once. Uncle Sam has first call on the railroads, and shipments are likely to be delayed in spite of our quick order-filling service.

To facilitate ordering—write for Stock and Odd Size List.

The Gandy Belting Company
732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

SAY "I SAW IT IN" BRICK AND CLAY RECORD

Your Coal Troubles Are Not Over

The tentative prices made by the government do not insure against shortage next winter.

You will have difficulty in securing the coal necessary to the operation of your plant.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 6c a week ($3.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

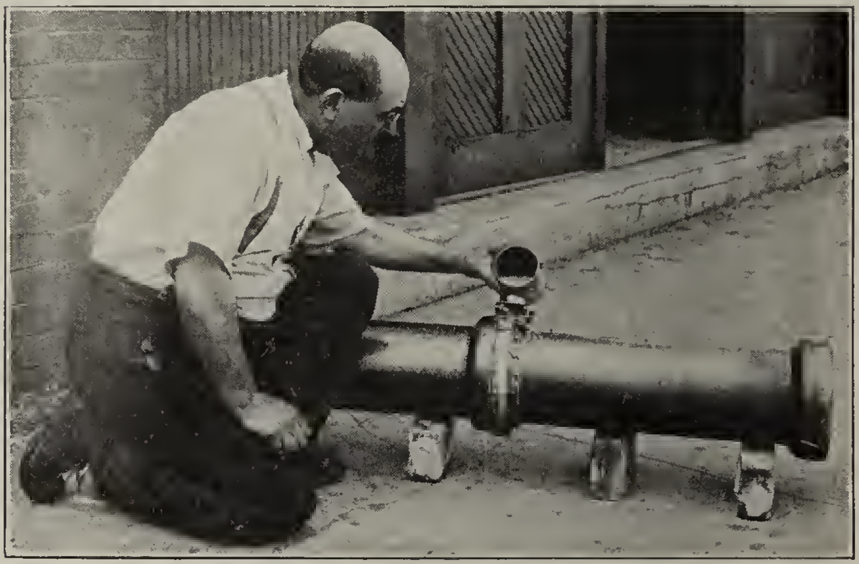
THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

SEWER PIPE JOINTS IMPROVED *by* POURING

BEARING THE STAMP OF APPROVAL of the Sewer Pipe Manufacturers' Association, whose headquarters are located at Akron, Ohio, the new development of poured joints for vitrified clay pipe gives promise of wide adoption. The good results which have been thus far achieved by the use of the poured joint indicate that this method is shortly destined to enjoy very wide favor both for building drainage and in the installation of public sewerage.

Endeavoring to perfect a joint worthy of the high qualities of vitrified clay pipe, and its unrivalled permanence due to the resistance of chemical and electrolytic attack, the originator, Dewitt H. Wyatt, of Columbus, Ohio, strove to develop not only a better joint but one in which the possibility of error thru inexpert workmanship would be reduced to a minimum. That he has accomplished these results is, in the opinion of prominent sewer pipe manufacturers, proven by the tests which have been made.



The Above View Shows the Sewer Pipe Joint With Mold in Place and in the Act of Being Poured.

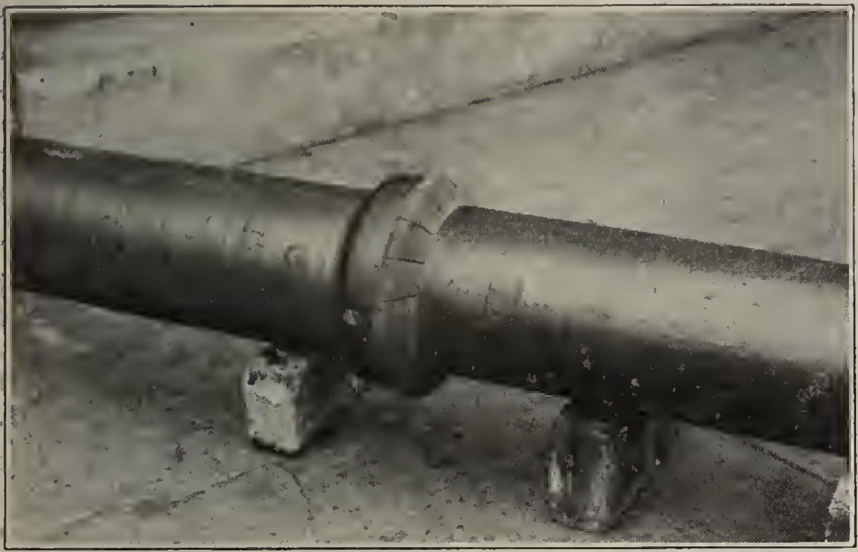
Besides withstanding tests which are considerably more severe than those proposed by sanitary codes, poured joints can be made without special skill. In addition, these advantages are also claimed for the poured joints:

Greater uniformity in the quality of the joints.
A denser cement when set.
More rapid operation.
Saving in joint material.
Less need for working space in the trench.
A neater joint.

These claims at times have been made for various patented materials, but in this case it is not the material that is a novelty, only the method of applying it being new. Portland cement is used, but instead of having it hand-troweled into place in a comparatively thick mixture, it is reduced to the consistency of thick cream and poured into the joint mold, after the joint has been caulked with oakum so as to prevent the grout from flowing into the pipe.

Several forms of mechanical molds for vitrified pipe joints have been designed and patented. That form used by the Sewer Pipe Manufacturers' Association in tests which it conducted consisted of a series of overlapping sheet metal plates strung on two small steel cables which clamped around the two sections of pipe to be joined during the pouring operation.

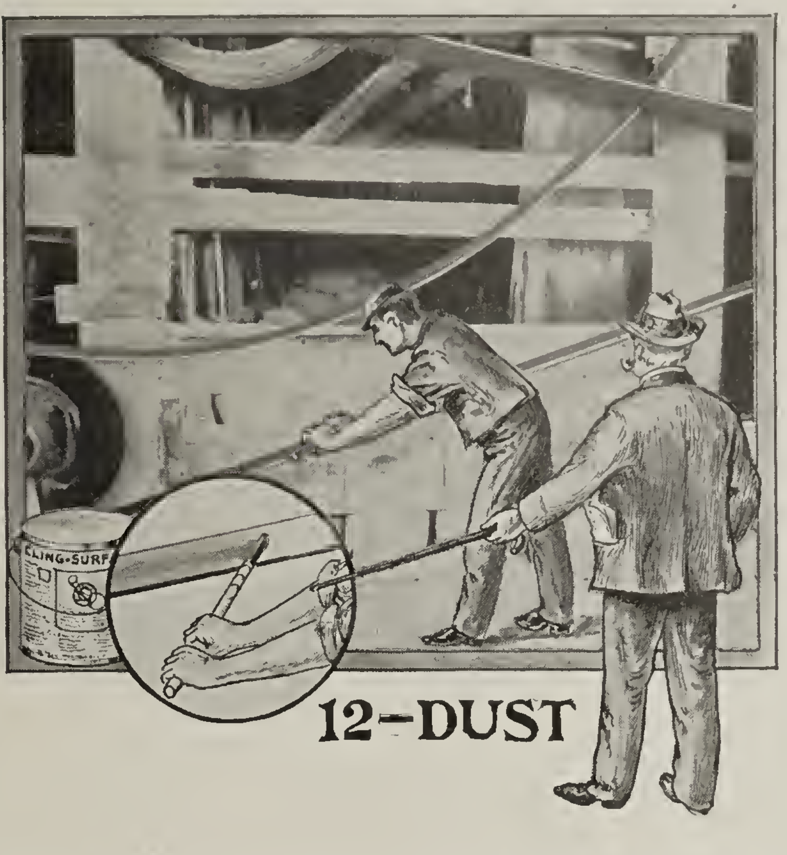
After the joints of the pipe have been caulked with oakum, which is compacted all around the joint to form a gasket to prevent the flow of the material into the interior of the pipe, the mold is dipped in oil and clamped in such a position that a firm grip is taken on both pipe. The mold overlaps just enough on the socket to insure an even and maximum space for the joint material, the funnel of the mold being uppermost. In actual operations sufficient molds are provided for the total number of joints to be included in the line, or in the case of large continuous operations, enough for one day's work. The molds are clamped onto all of the joints before any of the joints are poured.



By Following the Method of Pouring Joints As Outlined in This Item, Every Joint Will be Perfect.

Cement for the joints should consist of one part volume of Portland cement and one part clean, sharp sand of medium fineness. Enough water should be mixed with it to give the consistency of thick cream, or about the consistency of the grout filler which is applied to brick pavements. In pouring the joints, a little water is poured in each mold to insure free flow for the grout, which is poured in immediately after. Enough material is used to fill both the mold and the funnel. The leakage at the joints of the mold has been found to be slight, if the grout used is of the right consistency; however, a slight leakage is a safeguard against air-holes or water obstruction in the mold. The molds are renewed after twelve to twenty-four hours and unclamped in such a manner as to split the funnel into two parts leaving a protruding

Every Joint Poured With the Specified Mixture Was Impervious and Withstood Pressures of Fifteen Pounds Per Square Inch Without So Much As a Seep.



Don't Claim Exemption!

—because the air is filled with dust,
—because this dust settles on the belts,
—because it makes a belt dressing "ball up" are no reasons at all why your belts can't have the benefit of

CLING-SURFACE
BELT PRESERVATIVE

Just wipe the dust off first.

Then with the swab (as shown) treat the face of the belt A LITTLE AT A TIME.

Your belts will absorb CLING-SURFACE very quickly, leaving a clean, NOT STICKY, surface.

It will be smooth, velvety, and will not slip.

Nor will it hold the dust.

Your drives will last longer, do more work, cause no trouble, and can be run easy or slack under full loads.

They will never again have static electricity.

* * *

Results like these PAY.

Are you willing to try this treatment if such trial COSTS YOU NOTHING?

Then write today for the 25-pound can we have waiting for you.

Use it sixty days.

If you're satisfied, pay us for it. If not, we will take back what you have left, charge you nothing for what you've used, and pay the freight both ways.

ALL CHEERFULLY—no hard feelings!

Remember, use CLING-SURFACE and you won't need belt dressings.

Cling-Surface
the life preserver for belts
TRADE MARK

CLING-SURFACE CO.
1029 Niagara Street
BUFFALO NEW YORK U S A

In Every New Machine You Buy This Season, Put This in the Specifications:

Cork-Insert Pulleys

"Must Be Used"

Because they will help you to get maximum efficiency out of your machines.

Because they will cut down your cost of fuel.
Because they will reduce your belt expense.

Because they make your machines last longer and reduce repair expense to a minimum.

Cork Insert Pulleys are simple in themselves—yet their very nature gives positive certainty of full power,—the belts cannot possibly slip—they give uniformly good service regardless of atmospheric conditions or the prevalence of dust.

Any machine can be equipped with Cork Insert Pulleys—let us send you further details.

The Cork Insert Company
168 Federal Street
Boston Massachusetts

jet of surplus joint material. If it is desired to remove these jets, the cement remaining in the funnel is stirred slightly with a small rod, so as to break the set of the jet.

The series of tests made by the Sewer Pipe Manufacturers' Association were conducted with the two-fold object of determining the imperviousness of the joint and testing the comparative merit of various consistencies of grout. It was found that a mixture only slightly less ductile than cream was about the right consistency. A one and one-half mixture of Portland cement and sharp sand of medium fineness made the best showing. Every joint poured with this mixture was impervious, withstanding tests of fifteen pounds per square inch without so much as a seep. A comparatively stiff mixture on the other hand, of the consistency of mush, was used in two joints and showed that the thicker cement failed to penetrate to the bottom of the mold.

POURED JOINTS PREVENT SAGGING

The advantage of this type of joint over the hand-troweled joint are many, and of special importance is the fact that the poured joint completely eliminates the sagging or running of moist cement to the underside of the joint, which often occurs in a troweled connection. In making a hand-troweled joint there is a liability of disturbing joints previously made in the same line, thereby causing the cement while moist to crack or to cleave away from the pipe.

In pouring joints, however, disturbance is obviated since all of the joints are poured at one time. The clamping of the mold is a further safeguard against disturbance during setting. Unskilful ramming of a hand-troweled joint, particularly where the trench is too narrow for careful work, often results in the failure to fill the joint completely with cement. Pouring makes it practically certain that the cement will penetrate to the farthest recesses of the joint.

* * *

Masons Give Brick Flag Publicity

Printed on heavy enamel stock and in exact colors, the American flag of brick was the subject of a special supplement of the December issue of "The Bricklayer, Mason and Plasterer." This flag as was stated in an article carried in a past issue of *Brick and Clay Record* was erected in the display rooms of the Hydraulic-Press Brick Co., Chicago.

The supplement illustration shows "Old Glory" laid up according to government specifications and in correct proportions. The thirteen red and white stripes are made with red vitrified and white matt glazed brick respectively. The field of blue is made from dark blue enamels, and the forty-eight white stars are made from white glazed brick and inserted in the blue field. The brick flag measures thirty-two inches in height and forty-eight inches in length.

The supplement of "The Bricklayer, Mason and Plasterer," shows the national emblem in red, white and blue, surrounded on top and bottom by courses of green enamel brick and on the sides by substantial piers of green and buff brick. The effect is a very beautiful one.

* * *

John M. Meyer, sales manager of the Cincinnati (Ohio) Clay Products and Supply Co., was injured in an automobile accident on the evening of January 9. His car skidded into a post and he became bruised, but it is believed that he is not seriously hurt. He was taken to the General Hospital.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

"The Booster"

In the current issue of "The Booster," the little journal devoted to the interests of Sawyer belting, occurs an essay on waste that almost forces contemplation and consideration of our own tendencies toward wasting.

The probabilities are that every man wastes something and realizes that he should not. The following brief story on waste, classifies clearly the wasteful methods of wasting and is another example of the value of "The Booster":

"Potentially, each one of us has the power and ability to do great deeds, think big thoughts, and of splendid attainment. One thing alone frequently stands in the way—waste.

"The dividing line between failure and success is most frequently this very same thing.

"Waste comes in many forms: Waste of money, waste of power, waste of energy, waste of health, waste of time, and last, but most important, waste of opportunity.

"If a man is to be successful, he must learn to fight this waste.

"Money is wasted because of lack of intelligence in spending it.

"Power is wasted because we carelessly sacrifice our energy and our health.

"Sickness is the result of waste of our power of resistance, an evidence that we have not heeded the laws of health.

"Beware of the waste of time! Each of us has twenty-four hours a day that nothing but waste can take from us.

"With all these hours at our command, we carelessly sacrifice minutes making up our minds; hours are lost in thoughtless conversation, and incalculable time is wasted in mental post-mortems, when we should be looking ahead."

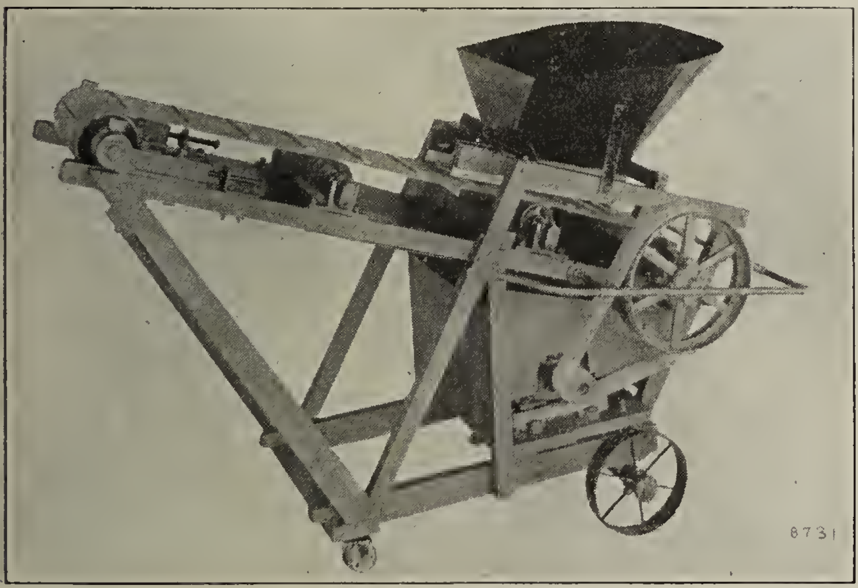
——Pierce M. & E., January 15, 1918.

⁂

Link-Belt Box Car Loader

The Link-Belt Company division of Nicetown, Philadelphia, Pa., has recently put on the market a low priced machine for loading all kinds of material into box cars.

The machine is shown in the accompanying half tone illus-



Link-Belt Box Car Loader

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

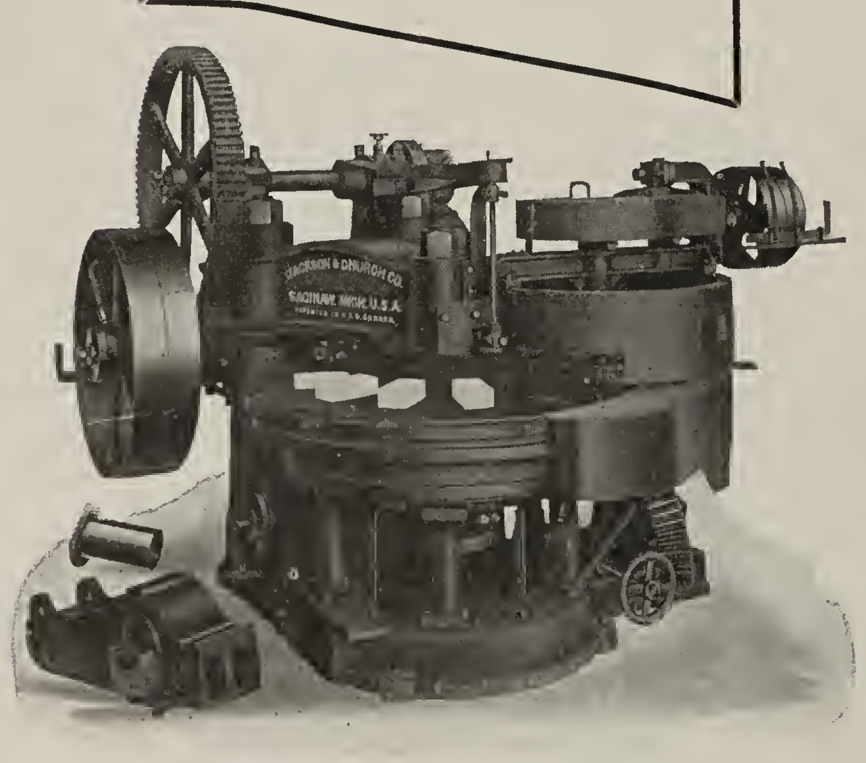
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

tration which is almost self explanatory. It is called the Link Belt BX Loader, and is a portable machine, driven by motor or gas engine, and handles the material delivered to it thru the steel hopper on a flat belt.

On a recent test it loaded 80 box cars in six days with but two men, and from this it may be seen that the loading of kaolin, ganister, sand, fire clay, bauxite, spar and shales may be accomplished cheaply and quickly.

* * *

The Clay Tile Silo

How many of the hollow ware manufacturers realize the enormous possibilities for the sale of silo block right in their immediate neighborhood? By immediate neighborhood is meant the county in which your plant is located, and after that the four to six surrounding counties and then later on the counties in the next larger circle.

One county, properly worked, developed and served should furnish a profitable field for one season's work, after which experience and knowledge gained in the correct method of building and maintaining a Silo, it is a comparatively simple matter to increase your sales in an expanded territory.

In the great farming sections of Iowa, Illinois, Kentucky, Ohio and similar states, the farms are numbered by the hundreds and thousands and each farmer is being urged by the United States Government to "build a Silo." Remember, also, that it requires about one carload of tile to build one Silo. What better market exists today?

There are really only two things that are important and which must be watched carefully by the clay plant if a lasting success is to be made, granting of course that your plant is producing A No. 1 ware.

First and foremost proper construction should be insisted upon and actually overseen and produced by the clay plant selling the tile; and second, the use of proper accessory hardware.

One of the unfortunate conditions that is existing today is the failure after a comparatively short interval of the Silo. The reasons are as stated above, usually.

Instead of selling the tile and the necessary equipment, and then personally insisting that the Silo should be erected according to specifications, and then operated according to best practice, as should be done, it has been the custom to sell the tile sufficient to build a Silo, and then—forget it.

Result is that Mr. Farmer unwittingly cheats himself, and you, by skimping on the cement used, by putting in a poor foundation, and by using unskilled labor in carpentry work.

Your work is outlined and plain; you must be responsible to yourself for the proper construction of the farmer's Silo, in order to succeed in business, and to stay in it permanently in your own logical territory.

In Kansas City, Missouri, in the Waldheim building, the Pierce Company is devoting untold time, energy, and money to develop along correct lines the Silo business, realizing that its possibilities are practically unlimited.

Silo doors, frames, reinforcing, and roofs for tile Silos are made, not as a side line or specialty, but their efforts are centered on the needs of the Silo manufacturer.

This solves a problem that has been acute, and the doors especially provide a means of Silo building success, which is synonomous with financial success for the clay tile silo factory.

The Pierce plan is founded on service—your service to the farmer, they know the business and if you want to investigate thoroly a new or an old opportunity, they will gladly help.

* * *

Removal Notice

The War Department has taken over the Barrister Building for Government use. The tenants desiring to aid the Government, rather than from choice, have promptly vacated. Until further notice Hubert E. Peck, Patents and Trade Marks, will be located at 29-31 Pacific Building, 622 F Street, Northwest, Washington, D. C.

BRICK and CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

The Need of the Hour in Our Industry

ON THE FOLLOWING PAGES are given reports of the meeting between various representatives of the clay products industry and the United States Fuel Administration at Washington, D. C., on January 18 and 19. These reports are written from the different angles involved and demand the most careful reading that you have given to anything in recent months.

After you have finished reading the account of the meeting referred to above, you cannot help but agree with us that there are some points brought out by this conference which have a most vital bearing upon the future welfare of the entire clay products manufacturing industry.

ACID TEST FOR ORGANIZATION

In the first place, the conference with the United States Fuel Administration at Washington, D. C., on January 18 and 19, was an acid test for organization in the industry. It will be noted from the report of the meeting, that the face, fire and paving brick manufacturers, as well as the producers of hollow building tile, were adequately and efficiently represented either by war service committees or the board of directors. Common brick manufacturers were not so represented, for that matter neither were the drain tile manufacturers, but it is a matter of common knowledge that the last mentioned group makes no pretense at having a national organization. Common brick manufacturers do, and therefore the fact that they were not adequately represented as an association is a sad commentary upon the effectiveness of the National Brick Manufacturers Association. This is not to be construed as a reflection upon the unselfish and broadminded spirit of the common brick manufacturers who spent their time and money to attend the conference in question at Washington. They went as individuals in the defense of their interests. They were not members of the executive committee and therefore are not to be held responsible for what the executive committee has failed to do in providing for a war service committee, as have the other associations.

One cannot help but be impressed with the utter lack of understanding of the situation and the inability to co-operate with other branches of the industry which was evidenced by those who represented common building brick at the conference. Again let us emphasize the fact that this was not the fault of the common brick manufacturers who went to Washington, to look after their interests, but is entirely due to the antiquated and vicious system of petty political maneuvering that has always characterized the management of the common brick manufacturers' association.

NEED TO CLEAN HOUSE

The common brick manufacturers need to clean house and need to do it without delay if they hope to survive the terrific storm of industrial readjustment that has come as a result of America's participation in the world war. This is not a time to mince words. We must call a spade a spade.

The second point of importance which a perusal of the conference report brings to mind is the crying need for an adequate national organization of clay products manufacturers. *The National Brick Manufacturers' Association is not the, nor even a national organization of clay products manufacturers.* It has long since surrendered any claim it may have had to such a position by changing circumstances and conditions. Face, fire, and paving brick, as well as hollow tile, sewer pipe and terra cotta manufacturers have their own national organizations—all doing excellent work and truly justifying their existence. The drain tile manufacturers need a national association but it is our understanding that steps are being taken in this direction. May they be hastened to the speedy formation of an effective association.

The National Brick Manufacturers' Association, if anything, is in fact an organization of common brick manufacturers and if it is to find any useful field of endeavor, that of common brick manufacturing is the most logical one.

The clay products industry, as has already been said, needs a powerful and effective national organization of all branches of the industry. If such an organization existed in fact instead of on paper the resulting confusion and disagreement at the Washington conference, we confidently believe, would have been impossible.

GOOD REASONS FOR STRONG NATIONAL

There are many good reasons for the formation of a national organization of clay products manufacturers, embracing the producers of face, fire, paving and common brick, hollow tile, sewer pipe, drain tile and terra cotta. At the present time the fuel situation is the biggest justification for such an association. A little later on we firmly believe that the matter of building operations will develop as a reason for the industry getting together and having its various branches co-ordinated in a national association. In normal times the defense of the industry's rights before the Interstate Commerce Commission would constitute good reason for a national association, in addition to a hundred and one other conditions and situations—not local in character, but national—which would be such an association's justification for existence.

As a preliminary suggestion let it be said that a national association of the various branches of the clay products industry might be a delegate body. That is, the face, fire, common, paving brick, hollow tile, sewer pipe, drain tile and terra cotta associations would agree to elect representatives with power to act to participate in annual or semi-annual conferences of a national character involving questions of mutual interest. It is not necessary for such conferences to be entirely social in character, rather would it seem advisable to make the transaction of necessary business paramount.

BIG MAN NEEDED

Such a national association as has been suggested should have regular officers elected by a delegate convention with a paid secretary to devote all his time to the interests of the clay products manufacturers of America as a whole and where they coincide. It goes without saying that such a secretary ought to be a big man—one with executive ability and able to handle the work effectively. No politician should be tolerated. The interests of the politician and of the business man will no more mix than will oil with water.

In closing we anticipate that someone will raise the cry that this is destructive criticism. In answer, we wish to say that *Brick and Clay Record* has on many occasions refrained from expressing itself as fully as desired for the reason that it wished to promote and encourage harmony among individuals and groups of manufacturers as far as possible. The time, however, has come when we must be frank with each other for our preservation as an industry. *Brick and Clay Record* has done as much for the clay products manufacturers of America in recent years as any other individual interest, *excepting none.* Money and time have been contributed liberally to the support of every good movement. We defy anyone to disprove these statements.

However, let that be as it may, the point we wish to emphasize and *from which* we do *not* wish to draw attention, is that, first, *the common brick manufacturers of America need to reorganize on an entirely different plan of operation*, and, second, but perhaps more important than the first, *the clayworking industry needs an adequate and truly representative national association on the delegate body plan. WHAT ARE YOU GOING TO DO ABOUT IT?*

PUTTING *the* INDUS-

Report of the Conference Between the Various Branches of
istration, Held on January 18 and 19 for the Purpose of Ad-

By Waldon

A TASK FORMIDABLE in itself and as yet not half accomplished is that of placing the American clay products industry on a war footing. By "war footing" is meant, of course, a status that will enable the industry to continue to operate in the face of railroad congestion, labor shortage, and the limitation on coal supply that are now combining to handicap all lines of industry in the United States. "Business as usual" would be impossible in the face of the existing disturbance of fuel and transportation conditions even if building operations showed no diminution in volume.

Reconciled as most brick men are to the necessity for readjustment—however much they may differ as to ways and means—there is a universal desire to find some solution that will allow the producing and selling interests to preserve their organizations and maintain their good-will against the day when the signing of the peace treaty must, inevitably, bring a sudden and heavy demand for all classes of clay products. It is the wide divergence of views on the part of the practical men in the industry as to what should be done that renders the problem far from solution. Indeed, instead of saying that the job is not half done perhaps it might more accurately be said that it is only just well begun.

CLAY PRODUCTS NOT "NON-ESSENTIAL"

Right here and now the statement may be made most emphatically that there is no disposition on the part of any prominent governmental official to classify the brick industry as a "non-essential" industry, if there is any such thing, or one of the industries "less essential" to the prosecution of the war, as some persons prefer to phrase it.

While, as one official recently expressed it, "the brick industry must go on," there has been at Washington, ever since the Railroads' War Board precipitated the issue with its memorable list of 525 supposedly non-essential industries, a disposition to make every industry in the country justify its existence and to scrutinize each individual activity as a possible candidate for one of two "reforms." Reform No. 1 would eliminate loss or waste by cutting down production if there were not imperative need for capacity output. Reform No. 2 would divert, whenever possible, whatever part of the productive capacity of a plant could be spared from commercial service to governmental work or war contracts. The brick industry, and indeed the entire clay products industry early attracted the attention of the federal revisers of the industrial program because unauthorative intimations came to the capital to the effect that a decrease in building operations, road improvement work, street paving, etc., had brought about a slump in demand for the lines involved.

NO SUPERFLUITIES IN INDUSTRY

The first idea of Uncle Sam's war managers was to turn over the whole proposition of brick and clay products to the Commercial Economy Board of the Council of National Defense. This body, the function of which may readily be surmised from its name, had already accomplished in other industrial fields notable work in inducing manufacturers to eliminate superfluous and unprofitable lines. For example, the Economy Board has thus "shaken down" the paint industry with the result that for the period of the war the trade will content itself with standard colors instead of an infinite variety of shades, and the stand-bys in paint will be put on the market only in standard containers.

It did not require long to demonstrate that the Economy Board was not the proper quarter to which to refer the brick and clay products problem. Makers of burned clay products have no superfluities that they can cut out as the clothing manufacturers abandoned patch pockets and as the shoe manufacturers cut out fancy-colored shoes.

The next guess in officialdom nominated as a referee for the brick industry the Industrial representative of the War Industries Board. Now, the forte of the Industrial Representative is to find war contracts for factories that are left without an occupation owing to the disturbance of commercial and industrial conditions. Promptly it became manifest that brick manufacturing plants must be kept on their present assignment. A brick plant can not be switched at short notice to some special war commodity as piano factories have been turned upon the manufacture of airplanes.

FUEL ADMINISTRATION TAKES CHARGE

Finally, then, the question of how the brick industry should fare in war-time was passed along to the Fuel Administration. There had been a "fuel end" to the proposition at all times and with the growing acuteness of the coal situation and its close connection with railroad traffic congestion it seemed logical that contact between the brick industry and the government should be established at this point.

Incidentally, Mr. Peek, the Industrial Representative of the War Industries Board, continues to keep closely in touch with the situation because he desires to see brought about within the industry certain improvements of practice that he, in company with many of the leading brick manufacturers, believes will be of tremendous value to the whole industry not only during the war but after the return of normal conditions following the war. Conspicuous among these advances, which have been impracticable so long as brick manufacturers were left to their own devices, but that with governmental backing may now go thru, there may be mentioned the standardization of bricks as to size, shades, and texture.

At the United States Fuel Administration the contingency with respect to brick and other clay products is being handled by P. B. Noyes, assistant to Fuel Administrator Garfield. Mr. Noyes has just completed a general conference with the representatives of the brick

TRY *on* WAR BASIS

the Clay Products Industry and the United States Fuel Admin-justing the Coal Consumption During the National Emergency

Fawcett

and hollow tile manufacturers, this taking place on Friday and Saturday, January 18 and 19, at Washington.

CALLS IMPORTANT MEETING

In accordance with the call for the meeting, well organized war service committees of the American Face Brick Association, National Paving Brick Manufacturers' Association, Refractories Manufacturers' Association and the Hollow Building Tile Manufacturers' Association, as well as representatives of the National Brick Manufacturers' Association, together with some common brick manufacturers, assembled at the office of the fuel adminstration at 2:00 P. M., January 18.

A separate hearing was granted to the Refractories Manufacturers' Association. The hollow tile manufacturers, probably due to an error or some misunderstanding, were notified to appear at 3:00 P. M., and since this branch of the industry desired a separate hearing, this was granted.

However, Mr. Noyes was unable to make any headway with those interests who remained and therefore suggested that the face, paving and common brick manufacturers select two representatives each to form a joint committee to reach, if possible, a uniform recommendation which would effect a considerable saving in fuel. James G. Barbour and C. C. Blair, representing the National Paving Brick Manufacturers' Association; George A. Bass and P. B. Belden representing the American Face Brick Association, and Warren Griffis and T. A. Randall representing the National Brick Manufacturers' Association (common brick manufacturers) were chosen to form the joint committee.

This committee meeting adopted the following statement which was, in effect, a compromise.

STATEMENT OF JOINT COMMITTEE

In conformity with your idea, we believe the four clay industries represented in meeting yesterday, that is, hollow tile, paving brick, common brick and face brick, are so interwoven as to interchangability of products they should be similarly regulated.

Notwithstanding your suggestions the hollow tile industry was not represented in the conference suggested by yourself, representatives of the common, paving and face brick industries that did participate in the meeting wish to declare themselves as entirely patriotic and willing to make any necessary sacrifice under present war conditions. In fact, for months many have been endeavoring to bring themselves into adjustment with the war needs of the country. Production has been curtailed and many plants manufacturing non-war products have changed their manufacture to more essential products.

As we understand it, you wish information regarding the clay industries, and suggestions as to our ability under present conditions to save fuel.

We strongly protest against our industries being classed as non-essentials and while we admit that perhaps, as a whole, we are non-war producers, we unanimously submit the following suggestions:

1. We recommend a 25 per cent. universal curtailment in the consumption of fuel, from the average consumption of the past three calendar years.
2. That this curtailment be made daily, periodically, or by shutting down individual plants where concern operates more than one, at the option of the manufacturers; that credit for curtailment from January 1, 1918, be given.
3. We recommend the fuel administration to see that this order is obeyed universally and in addition to coal consuming plants, the order should include plants using either natural gas or fuel oil.
4. That the fuel administration enforce the same curtailment upon all competitive material.
5. Decreased production means increased costs. We believe, however, that if the government will sanction pooling in production and distribution a considerable saving for the public may be effected thereby.

This statement was presented to Mr. Noyes at 11:00 A. M., on January 19, by Chairman Bass and was received with words to the effect that it was a very fine statement, but did not save sufficient fuel. Mr. Noyes spoke quickly and to the point, stating that the government's object was to get coal—it was not to be used to overcome troublesome conditions within an industry without an entirely adequate return.

CONFERENCE ENDS IN DEADLOCK

No more chaotic conference has been held in Washington since the war began than the initial confab which brought into contact with the government representative, spokesmen for the brick and hollowware manufacturers. It seemed as tho there were almost as many different opinions as there were men present as to when and for what intervals clay plants should shut down in order to conserve coal. While the brick men were widely at variance as to how curtailment should be accomplished (especially with an eye to preserving intact the forces of skilled workers at the plants) they were a unit in declaring their inability to accept the suggestion of Mr. Noyes that production be reduced 50 per cent. in 1918 below the 1917 output, which latter, as our readers know was below normal in some branches.

The meeting was dismissed with the understanding that, for the present, no order curtailing or cutting off further production of the industries represented, other than that already made by public announcement, would be issued. The conference was adjourned in the hope that exchanging of ideas among the brick and hollow tile men will ultimately present a basis of agreement that will be satisfactory to all, in fact, the three committees represented on the joint committee of paving, face and common brick associations were instructed to consult with their people along the lines suggested, looking toward another early conference with the fuel administration.

The government is also desirous that the brick manufacturers in each city and locality shall effect pooling arrangements with a view to carrying out economies in production and the understanding is that the United States Department of Justice will sanction combines that would otherwise not be permissible under the Sherman Anti-Trust Law.

Furthermore, Uncle Sam, in the interest of a relief of the strain upon the railroads, is asking that the brick industry be localized to as great an extent as possible. The government is, in fact, on the warpath against the whims of architects and wants to bring about a condition whereby brick will be used in the section where they are manufactured instead of being shipped hundreds of miles.

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Drain Tile Exempted

In connection with the conference of clay products manufacturers with the United States Fuel Administration which was held in Washington on January 18 and 19, C. B. Platt, secretary of the Permanent Buildings Society, was the only representative of the drain tile industry present. Largely thru his efforts and largely because of the fact that government officials were so well informed as to the great need for drain tile, this product received more favorable consideration than did any of its brother products made of clay.

The fact that the government was so well informed as to the advantages of tile drainage was very fortunate indeed since it made easier the task of Mr. Platt to show the desirability that the production of drain tile go on without interruption. As the ruling now stands, fuel supply to manufacturers of drain tile will not be curtailed to any degree.

Mr. Platt in talking before the war time conference of the Iowa Clay Products Manufacturers' Association pointed out that the fact, that the government already had on hand statistics showing the importance of drain tile to the farmer, helped bring about the exemption of drain tile. It was also pointed out in his talk that the need for a stronger association as between drain tile manufacturers was exceedingly important.

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Hollow Tile Manufacturers' Proposition

As has already been stated, the Hollow Building Tile Manufacturers' Association secured a separate hearing at three o'clock on the afternoon of Friday, January 18, at the offices of the United States Fuel Administration. They proposed that the fuel administration issue an order curtailing the supply of fuel to their branch of the clay products manufacturing industry 25 per cent. under last year's figures. If this were done, the hollow tile manufacturers pointed out, 150,000 tons of coal would be saved during the coming year, and altho the hollow tile makers are supplying a large part of their output to the government for its construction needs in connection with the conduct of the war, they have declared that they desire a part in the coal saving program.

The following directors of the Hollow Building Tile Manufacturers' Association were present at the conference: H. C. Downer, president; H. M. Keasbey, J. T. Howington, Frank R. Hale and G. A. German, vice-presidents, and E. R. Sturtevant, secretary.

⁂

Says Can Not Use Your Own Fuel

The United States Fuel Administration has ruled that in case of government orders for total shutdown or curtailed production, manufacturers who own and mine their own fuel for their own use exclusively and transport it for their own need without the use of common carrier, are included in all such orders.

P. B. Noyes in issuing this statement to representatives of one branch of the clay products manufacturing industry recently, stated specifically that the orders already made applied alike to all, regardless of such favorable conditions which may exist.

In speaking of this matter, he detailed case of a California manufacturer using his own natural gas from his own well who wished to be an exception in the general closedown order. This manufacturer asked exemption on account of the fact that if he did not operate his plant the gas "would go into the air." Mr. Noyes stated that the manufacturer was stretching it a little bit perhaps, but that the fuel administration had ruled to let the gas go into the air if it was necessary in order to close down.

The fuel administration is evidently looking out for the competitive situation as it would be fundamentally unfair to permit one manufacturer to operate with his own fuel and close down a manufacturer who had to purchase fuel.

⁂

Dealers Brave Storm to Hold Meeting

With characteristic "pep" the new administration of the Face Brick Dealers' Association of America held an executive committee meeting at the Hotel Statler, Detroit, Mich., on January 15. In the face of a terrific blizzard the members of the committee left their respective domiciles and gathered only a day late in the "Motor City."

The meeting was scheduled for January 14 but owing to the delay in railroad transportation it was postponed until the following day. A number of important matters were discussed at this meeting, among these being the following: membership of the association to be extended to include all dealers thruout the United States and Canada; transferring funds of the association; amending constitution to increase the executive committee and change their terms of office; equipment for headquarters office; publications; educational institutions; quarterly meetings of board; co-operating with the S. A. F. E.; official seal and membership certificates, and proposal of government to curtail private construction and public work.

Those present at this meeting were President John A. Stoner, Cincinnati, Ohio; Dr. J. W. Morrison, Detroit, Mich.; W. H. Gifford, Chicago, Ill., and H. Serkowich, secretary, Cincinnati, Ohio. Another meeting of the executive committee is being planned for a day and place some three months hence.

Owing to Retarded Mail Movement
due to congestion on the railroads, you may receive your copy of *Brick and Clay Record* a day or so late. However, if future copies fail to reach you in reasonable time, please write us and
We Will Send You an Additional Copy.

CO-ORDINATION NEEDED

The Fuel Conference, as Seen from the Standpoint of One of Those Who Attended

MANUFACTURERS OF CLAY PRODUCTS that enter into building construction—that is, common building brick, face brick and hollow tile, as well as makers of paving brick, were asked to do something more than pass resolutions commending the government and offering their services, advice, and product for war uses, when, on Friday, January 18, they were represented in Washington by their several War Service Committees, who had traveled to the Nation's capital at the behest of P. B. Noyes, of the National Fuel Administration.

William Schlake, president of the Illinois Brick Co., was spokesman for the common building brick manufacturers present, while Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, spoke for the men who make the brick that makes the permanent highway. George A. Bass, president of the American Face Brick Association, was present, with several of the Board of Directors of that Association, and E. R. Sturtevant, secretary of the Hollow Building Tile Association, had a delegation with him to see that hollow building tile did not get a set-back.

Mr. Noyes, speaking for the National Fuel Administration, pointed out that the demands made upon the coal supply of the country—or rather upon the available coal production of the country—bade fair to take a large slice of the country's fuel away from the men who had heretofore been using it in the various industries. He added that if the industries would see this, and act accordingly, they would, from purely patriotic motives, point out to Uncle Sam just where and how he could take a certain amount of fuel away from them, without materially hurting their present or their future and if they did not—well, then Uncle Sam would have to take it anyway.

He pointed out—did Mr. Noyes—that the men who were working in an industry and who had their money invested in that industry, knew, to the very last pound of coal, how much they get along with—and without. He intimated that the government, not having such intimate and affectionate knowledge, might, if it were compelled to use its mailed fist, hurt someone's feelings right in the pocketbook.

GUMMING UP THE CARDS

Then the brick industry fell out. It appears that each branch of the industry knew that the whole industry was "essential" but each branch thought it had a little more of that quality in its make-up than did the others.

A fire brick manufacturer, who had been "roped in" on the idea that a "brick was a brick"—at least for railroad purposes—raised his voice and made statements regarding the general "commonness" of all brick other than fire brick. "Daddy" Blair tried to explain that paving-brick was, as Maurice says: "Something else again" but a face-brick man said, "Yes, and you sell your seconds for building brick in competition with commons." And Mr. Noyes said that the whole thing had a most familiar sound.

The meeting lasted for a couple of hours, and at the end of that time, it was agreed to appoint an allied clay products committee of eight—two each paving-brick, face-brick, common building brick, and hollow building tile—to study the situation and report back, the next day, as to just how much the industry could cut down its present production and still be able to survive.

The next day found them once more before the bar of the National Fuel Administrator, but when they told him how many and how much of them had already closed down, and how short the cars were, and how long the waits between cars, and had rehearsed a few other troubles, Mr. Noyes, well nigh melted to tears, said he didn't see how they could be curtailed any more than they were—even tho they had been ready, or at least one of the branches had been ready—to voluntarily cut down even the present production some twenty-five per cent.

"70 PER CENT." TO DICTATE CONDITIONS

Mr. Noyes suggested that, where an association had in its membership a clear majority of the industry—say 70 per cent., and was clothed with authority to speak for that membership, it could agree, conspire, or whatever else it wanted to do, in order to curtail production and so conserve fuel. He said that, if this were done—or if 70 per cent. agreed to do a certain thing along this line, the government would issue an order making that same curtailment obligatory upon the other 30 per cent.

And—here's the funny part—where the government is a party to an agreement of this kind—it wouldn't be becoming of it, to say the least, to prosecute the manufacturers who had thus agreed and conspired—with government advice and help—to tear great holes in one of the provisions of the Clayton Act or the Sherman Anti-Trust law.

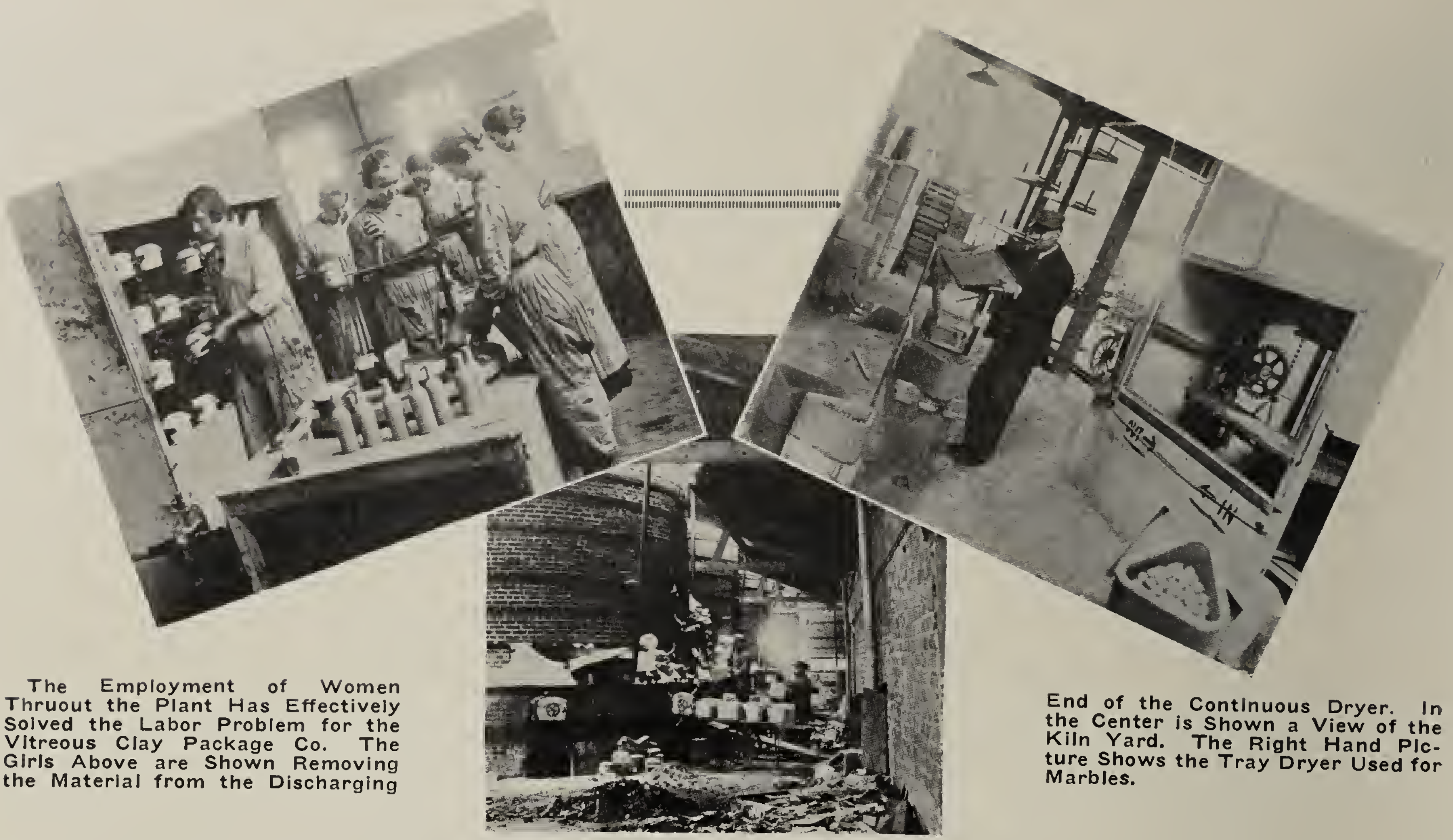
The fire brick men who had been dragged in on the "brick is a brick" idea, put up a brilliant camouflage of technical conversation in which high temperatures, calories, red corpuscles, and open hearth furnaces predominated. They were speedily escorted from the meeting and asked to wait—outside—until the other clay products men had been heard.

When it was all over, they—that is, the fire brick men—learned that there hadn't been any intention of asking them to mingle with the others—someone had blundered.

* * *

Face Brick Leaders Receive Tokens

To show their appreciation for the work accomplished by Frank Butterworth, chairman, and E. C. Hervey, secretary, of the Illinois-Indiana group of the American Face Brick Association, members of that body presented both of these gentlemen with diamond stick pins at the regular monthly meeting held at Indianapolis, on Thursday, January 10. The members of the Illinois-Indiana group feel particularly fortunate in having secured the services of both Mr. Butterworth and Mr. Hervey for the coming year.



The Employment of Women Thruout the Plant Has Effectively Solved the Labor Problem for the Vitreous Clay Package Co. The Girls Above are Shown Removing the Material from the Discharging

End of the Continuous Dryer. In the Center is Shown a View of the Kiln Yard. The Right Hand Picture Shows the Tray Dryer Used for Marbles.

An INNOVATION INDUSTRY *to* MANUFACTURE CLAY PRODUCTS

The Vitreous Clay Package Company Defies Kaiser Bill in the Marble Market; Makes Clay Bottles by an Entirely New Process; Operates Several New Machines, Chief Among Which is a Continuous Dryer, and Automatic Jiggering Machines, and Has Precluded Even Labor Trouble by Employing Women Thruout

On yon grey stone that fronts the chancel door,
Worn smooth by busy feet, now seen no more,
Each eve we shot the marble thru the ring.
—From Rodgers "Pleasures of Memory."

THE STORY of how Germany's loss in foreign trade is now, and in the future will continue, in increasing measure, to be America's gain, has been told in industrial and financial circles until it is now a familiar tale to most of us. That the clayworking industry should have a part in this story, however, is something that may not have been called to our attention. If not,the following tale of American enterprise should enlighten all engaged in the manufacture of clay products.

GERMANY CENTER OF CLAY MARBLE INDUSTRY

During the past few hundred years, at least, Germany has been the center of the marble trade. By marbles we mean those spherical toys which are the delight and chief pleasure of the school boy at and about the vernal equinox. We read that Nuremberg in the eighteenth century was the principal producing point for this article and that in the first decade of the twentieth century English marbles were all imported from central Germany, according to history.

It is apparent, however, that even before the war, America had entered into the manufacture of this product and it is reported that better and more round marbles were made in this country than abroad. With the coming of the war, of course, imports of marbles from Germany were cut off.

This afforded America a new opportunity and probably led to the formation of the Vitreous Clay Package Co., which has now erected a modern clay plant at Bedford, Ohio, twelve miles south of Cleveland, where all sorts of clay marbles, as well as bottles and other containers made from clay, are produced. A. R. Markle is president of the company, A. C. Baken, vice-president and treasurer, and A. M. Walker, secretary and assistant treasurer. O. C. McCormick, chief engineer of the Clay Workers' Equipment Co., Cleveland, has had a large part in the erection of the plant.

MACHINERY HOUSED IN MODERN BUILDING

After a speedy ride in "Mac's" swift and ever ready automobile, one arrives at the plant about one mile from the

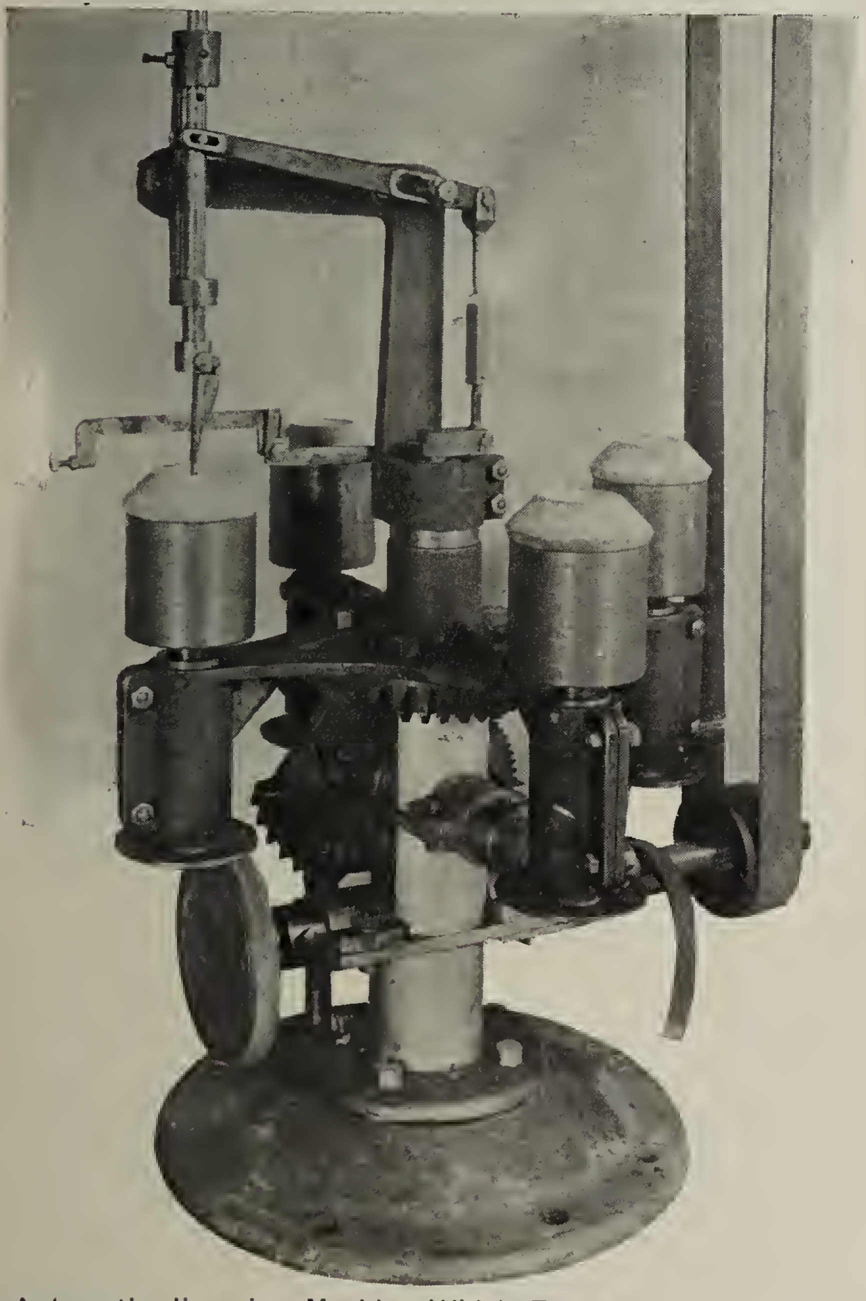
A. R. Markle, President.

A. B. Eken, Sales Manager.

O. C. McCormick, Engineer.

THE FORCES BEHIND THE VITREOUS CLAY PACKAGE COMPANY

main thorofare in Bedford, where he sees, nestled in a little valley, a building one hundred by seventy feet, constructed of hollow tile and having a roof of the monitor type with plenty of windows. Counting the stacks, it is found there are six kilns, of the potter's type, three glost and three bisque, used to burn the ware. Coal is used as fuel at this plant.



Automatic Jiggering Machine Which Forms Either the Neck or Base of the Bottle, or a Complete Jar or Other Piece of Earthenware Not Having a Smaller Neck Than Body. Two of These Machines Are in Use, for the Base and Neck.

Feeling that the beginning of operations is a good point at which to start, the visitor is led to the sagger-making department, where instead of finding a large force of men busily engaged in making these necessary but expensive accessories in the ancient and honorable fashion, he is amazed to see a sewer pipe press in action, from which finished saggers are being ejected, finished complete, with great rapidity. The saggers are pressed with the bottoms in them at one operation, an accomplishment that is made possible by arrangement of a special die and air valve. Much to one's surprise, it is also noticed that these saggers are triangular in shape. Upon inquiry it is found that the reason for this is that triangular saggers can be set in an ordinary potter's kiln with an increase of fifteen per cent. in capacity, a feat which is not possible with the oval saggers because of the great amount of space wasted by their inefficient shape.

The "sagger press," which has a capacity of 600 saggers a day, is not operated continuously, but only so often as is required to keep the supply in advance of the demand. In crushing the clay used in the press the company has taken every precaution to minimize the dust nuisance, which would prove especially objectionable and dangerous to its women workers. The dry pan in which this material is ground is placed in a small shed just outside the main building, and the material as it is prepared, is conveyed by belt to a position from which it can conveniently be transported to the sagger press.

ARRANGEMENT OF EQUIPMENT

The guide conducts the visitor to another portion of the plant and here he finds a ball mill with a capacity of three tons set on a foundation which is depressed below the floor. The reason for this unusual arrangement is that it facilitates the loading of the mill. The clay slip is forced from the ball mill by air to the rough agitator and from there into the smooth agitator, to which it flows by gravity. The filter press is the next stop from which the clay goes to the pugmill. A belt conveyor takes the pugged clay to the second floor, which is in the form of a huge platform raised fourteen feet from the main floor of the plant, and feeds it into another small sewer pipe press which has a perforated die. The clay is pressed into long, thin columns of varying thicknesses, which in turn are

On the Left is Shown the Marble Making Machines, Twelve in All. The Small View in the Center is of the Sagger Press Described in the Article, and that on the Right Shows a Portion of the Main Floor of the Plant.

fed into the machines which mold the marbles and which are shown in the accompanying illustrations.

There are twelve of these machines, each of which has a capacity of 80 marbles a minute, or a total of 960 every time the second hand makes a revolution. An error is pictured in one of the accompanying photographs which shows one woman worker at each machine; the machines are so arranged and operated that but one girl is required to every four machines, three being required to operate the battery of twelve.

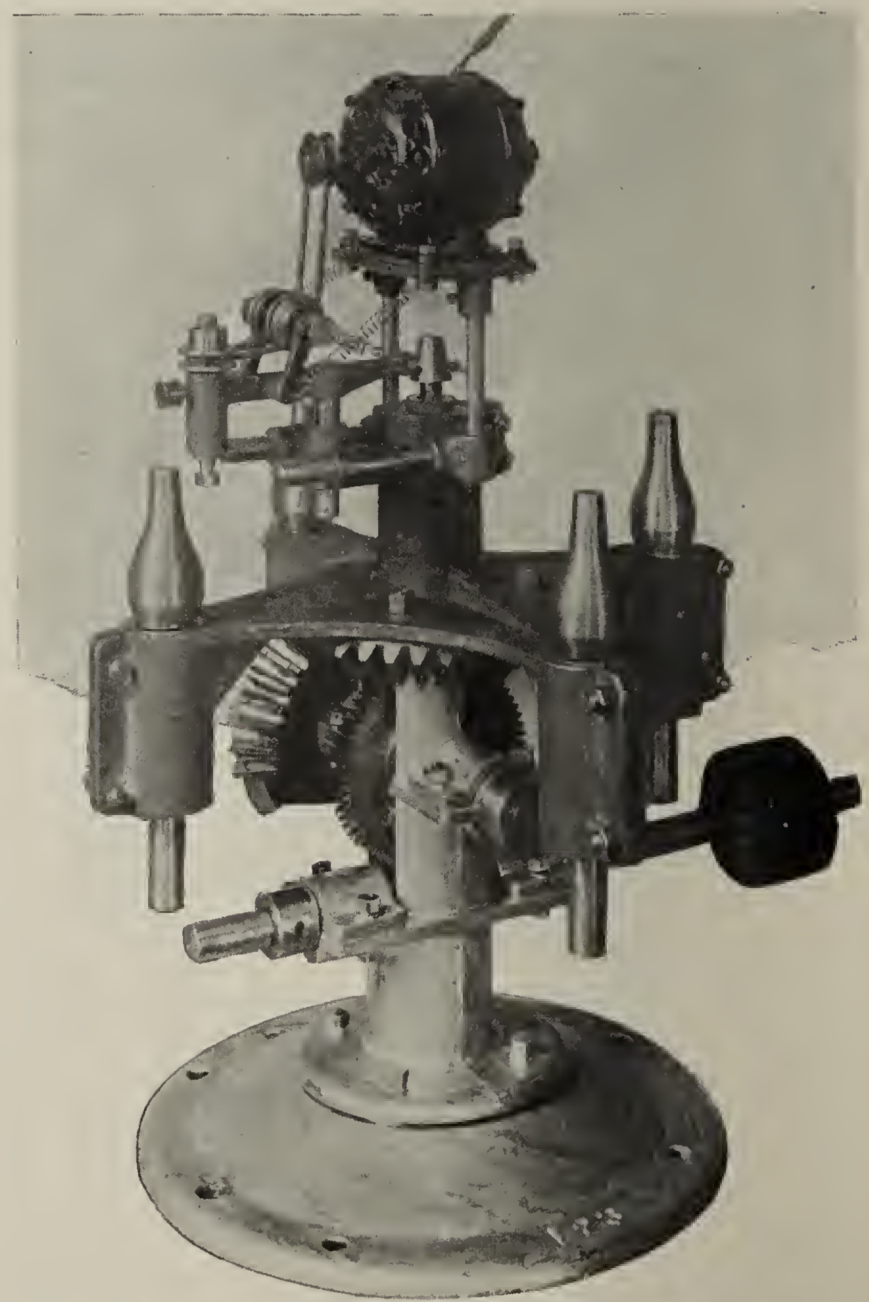
The women and girls who operate these machines also feed the spherical forms on to a moving chain conveyor leading to the dryer, which is especially designed for use at this plant, and is somewhat different from any that are usually seen in a pottery. There are three of them in operation, one being used for drying marbles and two for clay package ware. They consist of a huge frame work of steel with a number of sprocket wheels on which chains operate carrying the shelves, which move up and down while the ware is being dried. Steam is used to heat the dryers and they have natural circulation. Altho the marble dryer has a capacity of 1,000,000 an hour, the output of the plant reaches only 57,600 an hour. The ware is discharged at the opposite end in a bone dry condition. The marbles are then dipped into a glaze and burned in triangular saggers in a regular potters kiln. Incidentally, the floors of the kiln shed are paved with brick, presenting a smooth and pleasant trucking surface.

MAKING BOTTLES AND CLAY PACKAGES

A slightly different body is prepared by the same machinery on the main floor, that is, by the same ball mill and the agitators, filter press and pug mill, but when it is conveyed to the second floor it is fed into automatic jiggering machines by girls, one machine making the lower half and the other the upper half of the bottle, if that is the article being made. For other shapes which do not have a smaller neck than the body of the piece, two machines are not required at that particular point, but in the case of earthenware bottles, the top and bottom travel separately thru the automatic machines to the mold dryer, where the ware is dried to leather hardness.

One of the great advantages of this dryer, which has a carrying capacity of 1,500 molds is that as soon as the filled mold is removed from the chain arm, one which has just been emptied is put in its place and carried back to the receiving end of the dryer, arriving at that point in a perfectly dry condition. The saving in molds obtained by this procedure is enormous; ordinarily, of course, the moisture from the wet clay so permeates the plaster mold as to make it impossible to use it more than once or twice a day. With the new dryer, however, each mold is used from 25 to 30 times a day, depending upon the speed at which the plant is operating.

At the exit part of this dryer the pieces are placed on a slightly different machine, an illustration of which is shown herewith, the crown being tooled on the neck and the two halves are stuck together, to be fed into the final dryer, from



This Ingenious Device Is Used to Form the Lip and Crown on a Bottle, Doing it Automatically. The Neck, Dried to Leather Hardness, Is Placed on the Steel Molds and Spun Around, Coming in Contact With the Tool Shown.

whence they come out bone dry. Following this stage of the process, they are placed in saggers and burned in the regular way.

The machine which automatically jiggers the pieces is worthy of particular mention. A picture of one appears herewith from which, by careful study, a better idea can be obtained of its working than it would be possible to convey in words. The machine has accommodations for four molds, which by the way are made from aluminum patterns, insuring absolute correct sizes at all times. Two women operate this machine. One places the molds in the proper receptacle as it passes the point at which she is stationed, the other throws a wad of clay into the mold as it passes her. When the mold containing the clay reaches the proper point, the arm of the machine, which is shown in the illustration and which has a tool attached to the end, is thrust downward into the mold, which at the same time is spun around by a friction wheel seen below. This forms the piece and the surplus clay is cut off by a wire stretched immediately beyond this point. The mold is then lifted out of the receptacle and placed into the first dryer.

The machine which puts the lip and crown on the top of the bottle is a very ingenious device. It is shown in an accompanying illustration with all of the protection covering removed so that a very correct idea can be obtained of its operation. The tops of the bottles which are dried to leather hardness are placed on the steel mold and as they reach the tool shown in the illustration they are spun around and the tool automatically does the work. The main part of this machine is operated by a belt from the main shaft, but the tool is operated by a separate electric motor.

PLANT HAS LARGE CAPACITY

The capacity of this plant is sixty thousand bottles and five million marbles a week and they are made from a brown vitreous body with a transparent glaze. With the present shortage of steel and the consequent necessity for conservation of tin plate, the fact that food packages can be made from clay by machines such as are used at the plant of the Vitreous Clay Package Co. means very much for the packing and canning industries of this country, as well as the clayworking industry.

There is not a potter to be seen on the plant. This means much for the solution of the labor problem and also insures regular and efficient operation. The women employes are well taken care of; in fact, the company is planning to launch an industrial housing program in the near future, as a result of which it is hoped that it will be possible to offer six rooms at a rental of $15 a month.

The capacity of the plant is already sold for one year. There will be an increase in capacity almost immediately.

The Bedford China Co. is now erecting a dinner-ware plant on an adjoining plot of ground, in which ware will be made on automatic jiggering and casting machinery at a fabulously low cost. No skilled potters will be employed in this plant or in the chain of plants which it is planned to erect in other parts of the country. The automatic jiggering and casting machines have effectively solved the labor problem of the pottery industry and are due to revolutionize the business.

Immediately Adjoining the Tract Occupied by the Vitreous Clay Package Co., There is Being Constructed Another Huge Pottery Plant; One of a Chain to Be Built and Operated by the Bedford China Co.

* * *

War Subjects Scheduled for Wisconsin Meeting

"How are you going to meet the conditions developed by the war?" is the question being presented to the Wisconsin manufacturers by Samuel Weidman, secretary of the Wisconsin Clay Products Association, in announcing the next convention of that organization, to be held at the Republican House, Milwaukee, January 31 and February 1.

A strong effort has been made to get important and timely papers on the program. The fuel problem will receive the greatest amount of attention, but other conditions developed by the war, affecting the manufacture of clay products, will also receive considerable study.

Following are a few of the subjects to be discussed at the coming convention:

"Cost of Manufacturing Brick Under War Conditions," by Oscar Wilson, Menominie. Discussion—J. D. Pratt, A. O. Wachter, F. E. Poels.

"Use of Oil in Burning Brick," by C. E. Paeske, Milwaukee. Discussion—Fred Schnepferling, O. Zimbal.

"Fuel Values of Various Coals, Oils, and Producer Gas," by Prof. O. L. Kowalke, Madison. Discussion, J. C. Stier, J. P. Willet, Ed. Fricke.

"Fuel Problems Developed by the War," by W. N. Fitzgerald, State Fuel Administrator, Milwaukee. Discussion—Oscar Wilson, Erwin Fricke, N. L. Meier.

"What Should the Clay Manufacturers Do to Meet the Shipping Problem," by J. E. Randall, Indianapolis. Discussion—A. W. Hilker, F. Vogt, L. O. Hylland.

"Tile-drainage Prospects in 1918," by Prof. E. R. Jones, Madison. Discussion—J. J. Marquis, S. Gunther and G. M. Brown.

* * *

Ceramic Society Plans Excellent Program

The proposed program for the next annual meeting of the American Ceramic Society, to be held in Indianapolis, from February 10 to 16, promises to be even better than that of last year. Altho no definite information is available at this time, we are informed that there have been promised the following papers for next meeting: *(over)*

12 papers on clay and other properties and the methods of measuring same.
6 papers on terra cotta bodies and glazes.
6 papers on glass and enamels.
10 papers on porcelain and white wares.
6 papers on refractories.
3 papers on driers.
7 papers on kilns.

A special session for consideration of the report of the standards committee will be held, also a preliminary issue of the directory of ceramic raw material dealers will be discussed. During the week there will be a Section Q, consisting of a dinner, speeches and special music conducted by the committee on memberships.

At the close of the technical program a special session of one or more days will be held at which the policies of the association will be openly discussed. According to Arthur S. Watts, secretary pro tem of the American Ceramic Society, as a result of the efforts of the membership committee 169 new associate and fifteen contributing members have been recorded during the year.

Many plans for increased activity and helpfulness are being made and many changes in policies are to be discussed at the meeting.

From the short pre-convention notice above it is readily to be seen that the meeting will be a most profitable one and questions to be discussed sufficiently serious—and interesting—to warrant the attendance of every member.

* * *

Texas Brickmakers Hold Annual Convention

The Texas Brick Manufacturers' Association recently held its annual convention in the parlors of the new Oriental Hotel, at Dallas, Texas.

Following the presentation of papers scheduled, the following officers were elected by acclamation for the coming year: Matt Almond, president, Corsicana; G. C. Cole, vice-president, Ferris, and A. M. Smith, secretary and treasurer. The directors chosen for the coming year are as follows: G. Baron, Palmer; W. E. Wetherford, Ferris; A. E. Wilder, Mexia; M. Garrison, Garrison, and G. C. Cole, Ferris, Texas.

The meeting was considered as being very successful and the attendance satisfactory. The following visitors from outside points were present, in addition to those already named: J. W. Pegton, Shreveport, La.; W. H. Pugh, Marshall, Texas; M. Schuyler Marshall, Mesquita; Walter Bennett, Fort Worth; E. T. Cole, Ferris, and M. Garrison, Garrison, Texas.

Practically all of the Dallas brick manufacturers were present at the meeting. After the adjournment of the meeting, the delegates staged a theater party.

* * *

Central Ohio Ceramic Section Formed

Forty representatives of the clay industries of central Ohio met on January 14 at Zanesville, Ohio, and effected the formation of the central Ohio section of the American Ceramic Society, and elected for its officers the following: F. K. Pence, chairman; J. M. Morton, secretary, and A. S. Watts, counselor.

Three very interesting and constructive addresses were given at the meeting, the subject of which were:

Points of Efficiency in the Dressler Tunnel Kiln, by Philip Dressler, London, England.

The Artist and the Clay Manufacturer, by Frederick Rhead, Zanesville, Ohio.

The American Ceramic Society and its Relation to the Clay Manufacturer, by A. S. Watts, Columbus, Ohio.

The discussion following the addresses were very spirited and a lively interest in the new organization was manifested.

* * *

Common Brick Makers to Meet February 13 to 15

As has been previously announced, the National Brick Manufacturers' Association, composed for the most part of common brick manufacturers, will hold its annual meeting at the Claypool Hotel, Indianapolis, Ind., on the three days above mentioned.

The United States Geological Survey in reporting the value of brick and tile manufactured in the United States during 1916, stated that common brick was the product of greatest value of all clay wares—in other words, common brick manufacturers form a very important branch of the clayworking industry and occupy a prominent position in the nation's clay manufacturing statistics. Therefore it would seem that the necessity for an active association interest ought to be self-evident.

A program has been prepared for this meeting and will soon be announced.

* * *

Face Brick Plants Operating at 10 Per Cent.

The face brick, as well as other branches of the clay products industry in Ohio depends upon two factors, viz., the car supply and the fuel supply. That those two factors have reduced manufacturing to a low ebb is shown by a report covering 38 plants in the Buckeye State. During the month of December, the 38 plants manufactured approximately 3,500,000 brick when their normal output for the month was about 35,000,000. Thus it is seen that the output is only about 10 per cent. of normal. Car shortage, due primarily to lack of motive power is the worst feature. Some plants have not been able to ship any brick at all during the past three weeks and others only an occasional car. In order to alleviate the acute fuel situation some brick manufacturing concerns operating coal deposits of their own have been requested by the fuel administration to mine and sell coal commercially in order to help make up the shortage.

* * *

Cleveland Company Elects Officers

The officers of the Samson Brick & Clay Co., Cleveland, Ohio, held their annual business meeting on January 5 and elected officers for the coming year and transacted other important business. The Samson company has been actively engaged in reconstructing and improving in order to operate the factory on a much larger scale than has heretofore been followed.

At the annual meeting, the following men were elected to office for the coming year: Frank Nutting, president; Alex Pako, vice-president, and Frank C. Smith, secretary-treasurer. The directors chosen are as follows: Frank Nutting, Alex Pako, G. L. Hough, Frank C. Smith, Virgil Terrell, Frank Terrell, and A. J. Peterman. All of the officers and directors of the company are Cleveland men with the exception of A. J. Peterman, who resides at Fredenburg, Ohio.

A coal mine is operated in conjunction with the plant and a new entry is now being driven which will greatly increase the coal ouput. Mr. Nutting states that the company is operating continuously and has several orders on hand, but because of embargoes, shipment of the product is retarded to a great extent.

BOILER FURNACE OPERATION

The Third of "Brick and Clay Record's" Series of Articles on Fuel Topics, Which Deals with the Different Types of Hand Fired and Stokered Boiler Furnaces; and Also Outlines the Essentials in the Economic Combustion of Coal

By Henry Kreisinger, Engineer

United States Bureau of Mines. Published by Permission of the Director

COMBUSTION OF COAL is a chemical process in which the combustible parts of the coal combine with the oxygen of the air and generate heat. The air is just as necessary for the combustion as is the coal. To burn one pound of the average steaming coals requires about 14 pounds of air. One pound of coal is a cube with sides 2¾ inches long, or a piece of coal of the size of an orange. Fourteen pounds of air makes a cube with sides 5¾ feet; that is, the height of the average man.

These figures give an idea of the proportion of coal and air needed for economic combustion. If too little air is used, part of the coal escapes thru the chimney unburned and is wasted. The losses from this cause may be as much as 15 per cent. of the coal fired. On the other hand, if too much air is supplied, the heat necessary to raise the temperature of the excess air to the temperature of the chimney gases is wasted. This is by far the most common cause of large losses in boiler room. In some cases it is as much as 30 per cent. of the coal fired. The economic combustion of coal depends almost entirely upon the right proportion of air to coal, and the design of commercial furnaces centers in this essential requirement.

The removal of ash from the furnace is, to a large degree, done with the object of keeping unobstructed the flow of air thru the fire. The fireman shakes the grate or cleans his fires because the ash and clinker prevent a free flow of air thru the fuel bed. It is easy to weigh the coal and perhaps not difficult to measure the air; it would seem therefore, that the coal and air could be measured off and fed in the right proportion into the furnace. However, this is not entirely sufficient; the main part of the problem is the proper method of feeding the coal and air, so that the air entering the furnace is actually used in combustion.

The object of this article is to show and discuss the ways in which the various furnaces on the market meet this important requirement of the right proportion of air to coal, and the methods of feeding them into the furnace.

TYPES OF COMMERCIAL FURNACES

In a general way, the furnaces may be divided into hand-fired and mechanical stokers. In the hand-fired furnaces the coal is fed or charged intermittently at intervals of 2 to 20 minutes duration, while the air is usually fed continuously and at a nearly uniform rate. The ash is also removed intermittently at intervals of 3 to 24 hours, depending on the quantity and character of the ash in the fuel burned. The mechanical stokers, however, feed both the coal and the air into the furnace continuously at a nearly uniform rate. In some of the mechanical stokers the ash is also removed continuously. It is the continuous feeding of coal and air, and the nearly continuous removal of ash that is particularly favorable to keeping the coal and air in the most economic proportion.

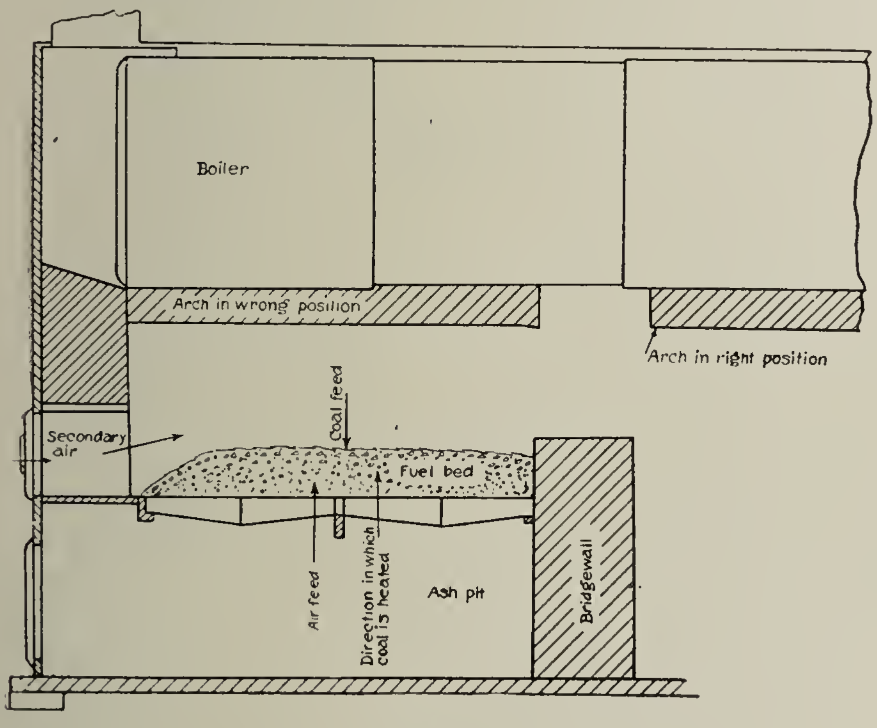


Fig. 1.

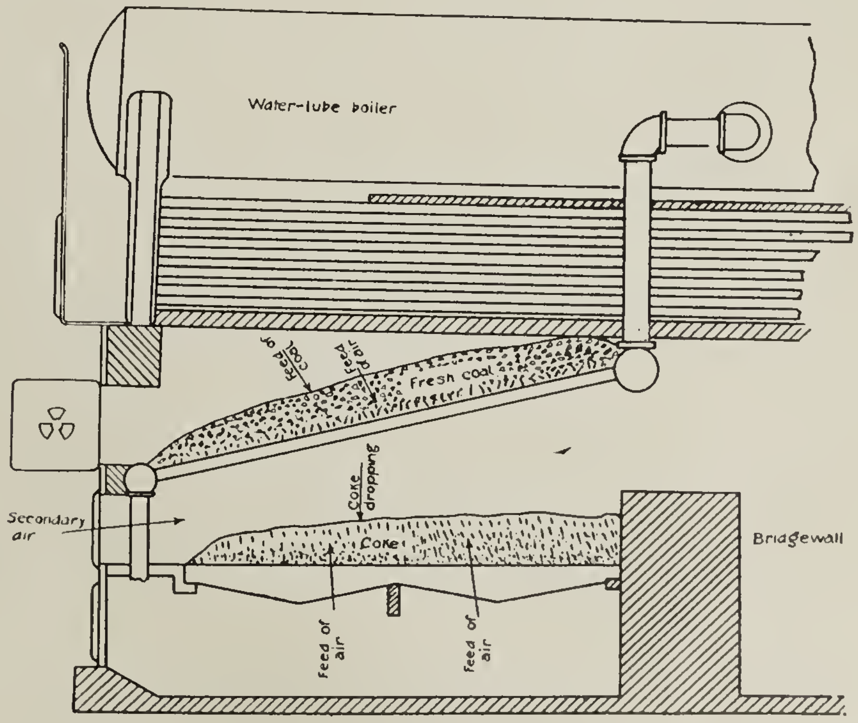


Fig. 2.

HAND-FIRED FURNACE

The intermittent feeding of coal is the chief objection to hand-fired furnaces from an economic standpoint, because it is practically impossible to keep the coal burned and the air supplied at the right proportion. This difficulty is due to the composition or rather to the character of coal.

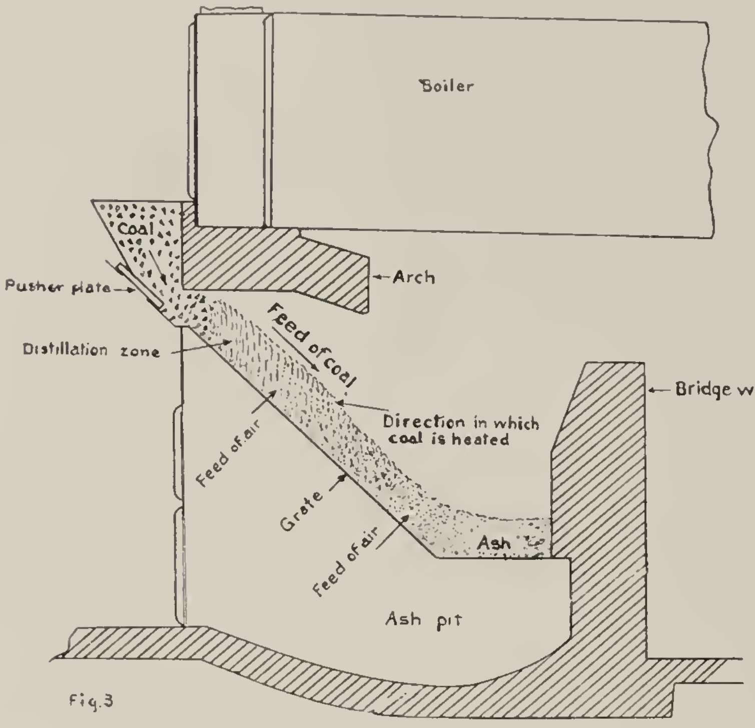


Fig. 3.

From the fireman's or furnace designer's standpoint, soft coal, which is the fuel most commonly used for making steam, consists mainly of two kinds of combustible, namely, the volatile matter and the fixed carbon. The volatile matter is that part of the coal which is driven off as gases and tars when the coal is heated, whether air is supplied to burn it or not. Thus, for example, in a gas retort of a gas plant, the volatile matter is driven off mostly as gas in entire absence of air, and flows thru the pipes to the house of the consumer, where it is burned after air has been supplied. In the boiler furnace it should be distilled in the presence of air and burned before it gets out of the furnace. Steaming coals contain 15 to 45 per cent., by weight, of such volatile matter.

The fixed carbon is that part of the coal which stays on the grate, or, in the gas retort, after the volatile matter has been driven off. In the boiler furnace it stays on the grate until burned by air being forced thru it. It stays in the gas retort until removed.

In hand-fired furnaces the burning fuel rests on the grate in a bed 4 to 10 inches thick. The coal is fed into the furnace by spreading a charge of coal over the surface of the fuel bed at intervals of several minutes. As the coal burns it sinks and finally reaches the grate after most of the combustible part has been burned. The air is fed in a nearly continuous stream; part of it flows thru the grate and the fuel bed, and part over the fuel bed thru the openings in the fire doors or other openings provided for it. The freshly fired coal at the surface of the fuel bed is heated mostly from below by contact with the hot coal and by the contact of the hot gases coming up thru the fuel bed. It is also heated, to a small extent, from above by radiation from the hot furnace walls and the arch, if there happens to be one. It is therefore heated very rapidly and its volatile matter is driven off in one or two minutes after firing. Fig. 1 shows the direction and method of feeding coal and air to hand-fired furnaces. The direction of the feeding, as well as the direction in which the freshly fired coal is heated, is indicated by the arrows.

Inasmuch as it is the rapid heating which causes the volatile matter to be distilled in a short time after firing, anything that will retard the heating of the freshly fired coal will prolong the distillation, thus making it easier to supply the right proportion of air. Since the brick-arch, when placed over the fuel bed, helps in heating the coal by radiation, it should be placed beyond the bridgewall, where it is effective in reducing the smoke.

INSUFFICIENT OXYGEN FORCED THRU GRATE

As the air flows up thru the fuel bed, the oxygen is practically all used in the combustion of the coked coal in the first four inches of the fuel bed; consequently, when the air reaches the surface of the bed there is no oxygen left to burn the volatile matter which is being distilled from the freshly fired coal. We have, then, conditions similar to those existing in a gas retort; that is, the distillation of volatile matter in entire absence of oxygen. This condition exists no matter how fast the air is forced thru the fuel bed. So long as the fuel bed is level and free from holes, all the oxygen is used before the air reaches the top of the fuel bed, where the distillation takes place. Forcing more air thru the grate merely increases the rate of combustion in the first four-inch layer of the fuel bed. It has been found that only six to seven pounds of air per pound of coal burned, or gasified, can be supplied thru the grate. Inasmuch as it takes about 14 pounds of air to burn one pound of coal completely, and only six to seven pounds of air can be forced thru the grate, it is clear that the other seven pounds must be supplied over the fuel bed, usually thru the openings in the firing doors.

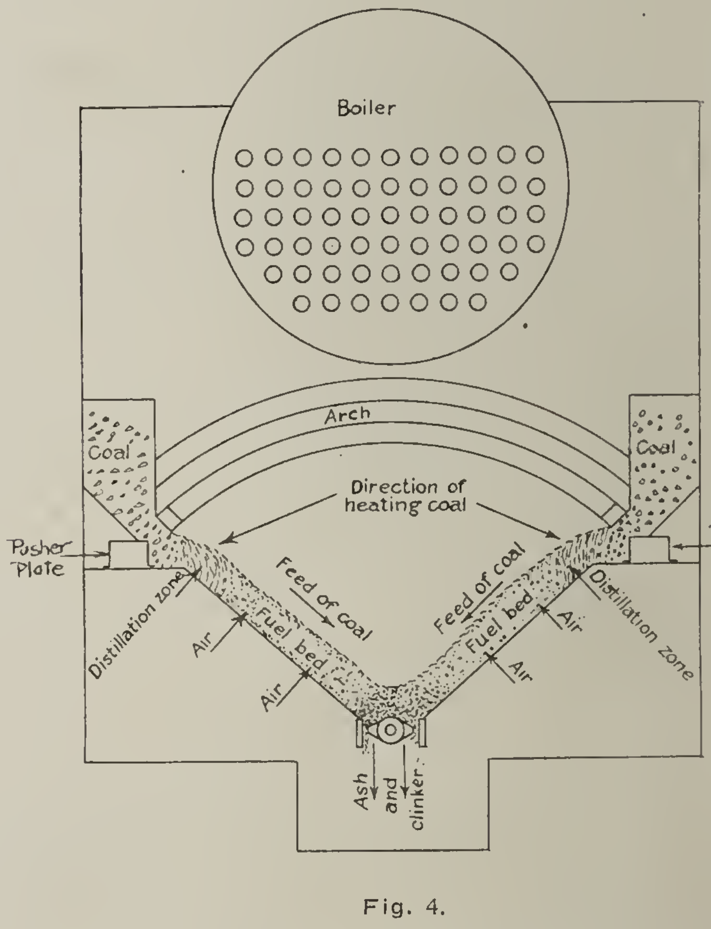


Fig. 4.

The task of supplying the additional seven pounds of air per pound of coal is made difficult by the intermittent feeding of the coal. Thus with the firings five minutes apart most of the volatile matter is driven off during the first one or two minutes, while the fixed carbon of the coal fired, or its equivalent, is burned in five minutes. If, for example, the coal contains 45 per cent. of volatile matter and 45 per cent. of fixed carbon, and assuming that all the volatile matter is driven off in two minutes, then during the first two minutes the 45 per cent. volatile matter is driven off, and also two-fifths of the 45 per cent. of fixed carbon is burned or gasified. Thus, about 63 per cent. of the coal fired burns or gasifies in the first two minutes, and only three-fifths of the fixed carbon, or 27 per cent., of the coal burns in the last three minutes of the firing cycle.

REGULATION OF AIR SUPPLY ESSENTIAL

In order to have the air and coal burned in the right proportion, 14 to 1, therefore, more than twice as much air should be supplied thru the grate and over the fire during the first two minutes than during the last three minutes of the firing cycle. This means that the feeding of the air should vary during the firing cycle; immediately after the firing, a large amount of air should be fed into the furnace and the air supply reduced when the volatile matter is nearly driven off. If enough air is supplied to burn the volatile matter immediately after firing, and the air supply is not reduced when the volatile matter has been driven off, there is a large excess of air during the last part of the firing cycle.

In other words, while for one or two minutes after the firing the supply of air may be 14 pounds to each pound of coal burned, after the expiration of three or four minutes the air supply may be 20 or 30 pounds per pound of coal. Thus, while during the first two minutes after firing the coal may be burned economically, during the last three minutes of the firing cycle, the losses due to large excess of air may be 10 to 15 per cent.

If, on the other hand, the air is fed at uniform rate and in such quantity that during the last two or three minutes of the firing cycle the air supply is 14 pounds per pound of coal, then during the first two minutes, the air supply may be only seven or eight pounds to a pound of coal burned or gasified. As a result of this low supply of air there may be a loss of 10 per cent. due to incomplete combustion. The losses grow greater the larger the firings and the longer the period between them. On the other hand, *these losses can be reduced by firing small quantities of coal at a time and at short intervals.* With short intervals between the firings the distillation of the volatile matter practically covers the entire firing cycle and the air can be so adjusted that it is kept nearly in the right proportion to the coal burned or gasified. With small and frequent firings the successive firing should be spread over alternate halves of the grate.

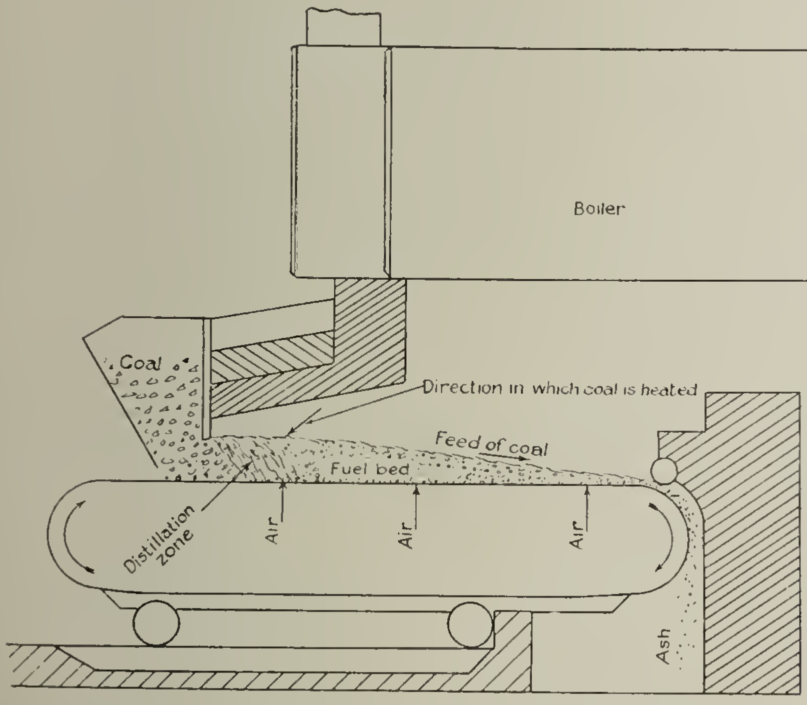


Fig. 5.

Various devices to admit automatically larger quantity of air over the fuel bed immediately after firing have been invented and patented. Some of these devices give very good results when proper attention is given to their adjustment. However, they have never come into general use. Perhaps the best—and the cheapest—solution for an economic air supply in hand-fired furnaces is to fire small quantities of coal at short intervals.

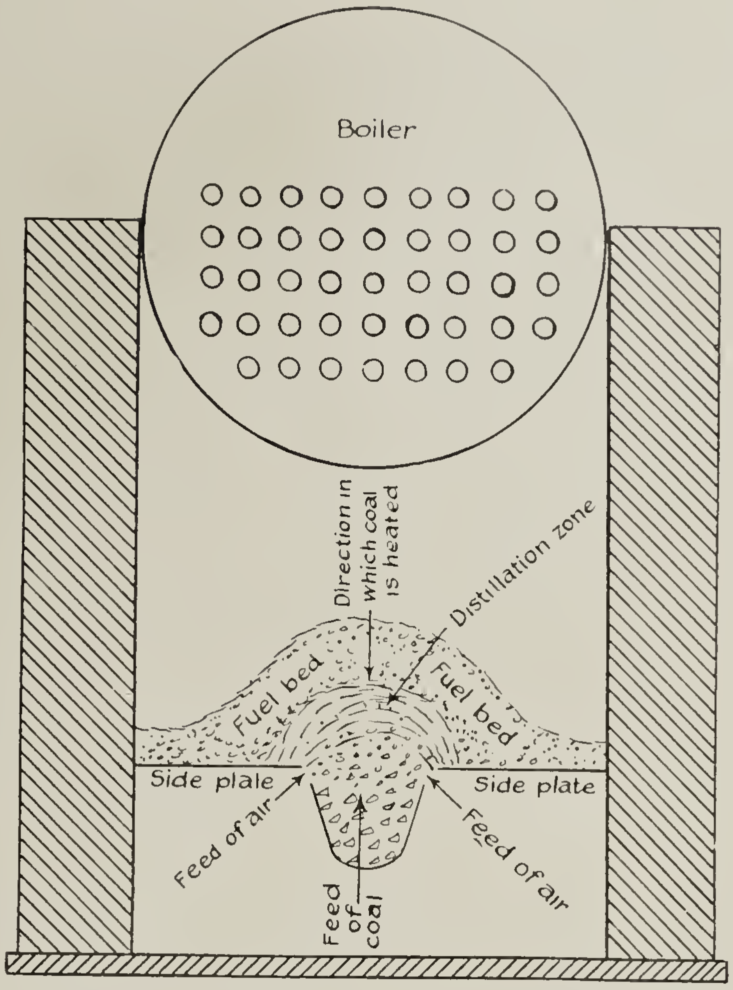


Fig. 6.

OPERATING RULES FOR HAND-FIRED FURNACES

The application of the following rules for burning coal in hand-fired furnaces gives good results:

1. Fire small amounts of coal often.
2. Keep fuel bed even by putting coal on thin spots. Avoid raking and slicing.
3. Keep fuel bed about six inches thick.
4. Increase or decrease steam pressure by opening or closing draft damper in uptake.
5. Clean fires when the demand for steam is small, and while cleaning have the draft damper partly closed.

Complete information on hand firing soft coal under power plant boilers can be found in Bureau of Mines Technical Paper No. 80. A copy of this paper may be obtained free by applying to the Director, Bureau of Mines, Washington, D. C.

The ordinary hand-fired furnace is used more extensively than any other furnace; its chief place of use is a small power plant. It can be used for any coal, altho it is best adapted to coals with low volatile matter. It is cheap to install and to keep in repair, and simple to operate; this cheapness and the simplicity in operation are its chief advantages.

DOWN DRAFT FURNACE

The down-draft furnace, the essentials of which are shown in Fig. 2, is designed to eliminate the wave distillation of

(*Continued on Page 250.*)

CO-OPERATIVE COMPETITION

The Benefits Derived by the Face Brick Industry, Selling and Manufacturing, from the Adoption of the Open Price Policy Are Almost Inestimable—The Legality of that Policy Is Touched Upon in this Article, and for the Benefit of Those Localities Still Held in Throes of Suicidal Competition, a Complete Plan for the Organization of an Open Price Association Is Given

By G. A. Gunn

Secretary, Northwest Face Brick Association. This Article Has Been Taken From an Address by Joseph A. Borden Before the Typothetae-Franklin Association of Detroit, and Very Cleverly Adapted to the Brick Industry.

A NEW ERA is dawning on the business world. Old things are passing away and all things are becoming new. Nowhere is this more strikingly apparent than in the brick industry.

The successful manufacturer or dealer of the future, therefore, the only one who can hope to survive, is that one who forgets the past and improves his methods today, that success may be assured for tomorrow.

Men in other lines have seen the hand-writing on the wall and drawn themselves together in a spirit of friendliness and self-interest to combat the iniquitous cut-throat piracy and competition of the past, and to re-establish their business on the higher plane of honesty, fairness and prosperity, resulting in the square deal to competitors and customers alike.

The Sherman law has been generally regarded by business men as an act designed by idealists and reformers to destroy legitimate effort to secure just prices permitting an honest profit.

When properly understood, however, this law need have no terror for any set of business men who may wish to join together to improve their conditions, eliminate ruinous competition, confer freely on their industry, and insure a reasonable profit above cost of production.

As applied to business associations, the Sherman law contains only two provisions which are necessary to be understood and observed. The first is that trade between the several states shall not be restrained by contract or combination. The second, that no group of persons shall combine or conspire to monopolize any trade.

The courts, in determining questions of violation of the law, have applied what is known as the "rule of reason" in deciding whether the acts complained of did or did not unduly restrain trade. This word "unduly" has been largely the keynote of the application of the law, and the intent of the parties has also been taken into consideration.

GOVERNMENT ENCOURAGING CO-OPERATION

More recently there has been a decided change in the attitude of the government and the courts toward business and trade associations.

The act creating the Federal Trade Commission now makes it possible for men to associate themselves together for mutual protection against the many enemies to a living profit.

The commission has, in fact, been pleading earnestly with business men to get together, compare their costs, improve their selling methods, and secure a profit in keeping with their investment and service rendered, deeming that any other course is an economic wrong and destructive to the common welfare.

Price maintenance is the basis and foundation of all association effort, and every step is intended to contribute to its consummation.

It is useless to deny that trade associations exist almost solely because of their favorable influence upon the market prices, and there need be no fear of the law if their efforts are properly directed to this end.

To attempt these results, however, by agreements which are in restraint of trade are no longer permitted in law or justice.

In years gone by various combinations have been attempted, having for their sole object the elimination of competition, the awarding by lot of certain jobs to certain members, and the placing of a joint price on such jobs. Such combinations have usually been short-lived and have fallen of their own weight.

These combinations have always given rise to more distrust of competitors and more bitter feeling than the most vicious kind of cut-throat competition.

After such associations disintegrate there comes a condition which is generally termed keen competition, but which is in effect industrial warfare, annihilation.

In this warfare it is not unusual to hear a dealer say: "If I can't get that order I will make my price so low that my competitor is bound to lose money on it."

Such a man will never know this side of the grave that there is a fixed and unchanging law that one business man can succeed only as his competitor prospers.

Anyone who is so foolhardy as to attempt to build his business on the losses and destruction of his competitor is a more serious menace to his community and to mankind than the pickpocket or the burglar.

CO-OPERATIVE COMPETITION—THE ONLY REMEDY

So long as it is a well-settled fact that men may not legally get together to determine in advance what they are going to do about prices, and that such arrangements have proven unsuccessful owing to suspicion and dishonest practices, there seems but one remedy left to raise the brick industry to a position of prosperity and stability.

This remedy is known as Co-Operative Competition, or the open price policy.

Under it, competitors may not agree what they are going to do about prices, but they may freely tell one another what they have done.

It is not illegal for men to meet in good faith and make a comparison of their costs and selling prices for the purpose of preventing disastrous competition and of securing legitimate returns for their product.

The subject of the open-price policy is most thoroly and convincingly set forth in the book by Arthur Jerome Eddy, "The New Competition." Another excellent book, "Price Maintenance" by Thomas A. Fernley, is most opportune in this connection.

Under existing provisions of law, the only safe course for the dealer to pursue is to have nothing to do with any conference or association where the objects and purposes are not clearly set forth in writing and the records or minutes fully preserved for inspection.

The object of such an association being to improve trade conditions, that fact should be set forth frankly and without subterfuge. The means to be employed should be plainly stated and the purposes so minutely described that a judge and jury could arrive at no other conclusion than that they are fair, honest, and legal, and that they are intended to accomplish their purpose without any necessity for resorting to unexpressed understandings, hidden moral obligations, or "gentleman's agreements."

LEGALITY OF OPEN PRICE PLAN UNQUESTIONED

The open price policy fully and amply supplies the means. It is proven to be sound, sensible and legal. There is no action involved, no agreement contemplated, of any kind or character, that is not well within the legal and constitutional rights of any body of business men.

The right of publishing price lists, the free and open exchange of sales reports, the dealing frankly and reservedly with customers and competitors alike, are rights which cannot be restrained or limited by legislative bodies or the courts.

Congress or state legislatures may enact laws that in the exercise of these unquestioned rights they shall not be abused to the detriment of the public, and that business co-operation shall not result in arbitrary and oppressive combinations, but the right of co-operation itself cannot be prohibited.

The right of the members of a brick dealers' or manufacturers' association to say what they will do regarding prices may not yet be fully established by the courts and anti-trust laws, but there has not so far been enacted anywhere a law which will prevent them from telling what they have done.

The open-price plan is nothing more nor less than an agreement that the members will make a frank statement of actual transactions, and actual transactions interest competitors to a far greater degree than assurances regarding the future, for the reason that assurances are not generally complied with.

The regulations of open-price associations invariably have a clause in substance that: "No member of the association shall enter into any agreement of any nature whatsoever, the object of which is to restrain trade, limit production or competition, regulate prices, distribute business, or do any other act which is contrary to the objects of the association as herein set forth."

Another clause reads: "The records of the association, its files, its correspondence, and its meetings, shall be open at all times to any public official who, in the performance of his duties, is legally authorized to investigate the workings of the association, the fundamental objects of the association being perfect frankness and openness in all dealings among members and in all dealings with customers and the public."

FORMATION OF OPEN-PRICE ASSOCIATION

In the formation of an open-price association dealers get together and agree:

First: That it is not intended to tell what they are going to do about prices along the old Board of Trade lines, to allot business, control competition or create a monopoly, and that there is no intention of doing any of these things either directly or indirectly.

Second, That they do intend to tell frankly and freely what they have done.

The essentials for making such an association successful are:

1. A set of by-laws and regulations.
2. A central office.
3. A secretary in charge.

The secretary to be selected, when possible, should be a person who has had no direct connection in a business way with any member of the association, in order that suspicion may not attach to him, since he is to receive information which can be exchanged only in certain ways.

Having adopted by-laws and regulations, selected a central office and a secretary, the open-price plan is put into operation by filing with the secretary all information on competitive work, all published prices or quotations then in effect, and for reference a complete line of samples of the brick handled by the members.

The doing of the few necessary things is simple enough and the plan becomes almost automatic, but at first meets with opposition, particularly from those who have never been able to sell their material on an equal basis with the other fellow.

There are two positive answers to all objections. First, these things must be done if the plan is to be tried. Second, conditions cannot be any worse under the open price than under the old secret methods, and they may be better, hence it is worth while to try the plan.

It may seem revolutionary to file all this information for the benefit of your competitors, but it has not proven so, and has worked out to mutual advantage whenever tried.

The very fact that competitors get together to discuss conditions affecting the brick business will soon establish a spirit of confidence which is vitally necessary to progress along any given line.

In all institutions of this kind when starting there are bound to be mistakes, but competitors will have to bear with each other and endeavor to convince the erring member wherein he was wrong.

The practice of giving one contractor, thru rebate or otherwise, a better price than another, is wrong and contrary to the true spirit of the open-price policy, and should be abolished at once.

Where such cuts are indulged in excuses will be made, but they are only a subterfuge and will soon cease to be the practice, for the reason that the one guilty of them places himself on a par with the junk dealer and his customers will so regard him.

PLAN PLACES CONTRACTORS ON EQUAL BASIS

The fair and square contractor welcomes the open-price policy because he is assured thereby that his competitor is paying the same price for his material and consequently must figure on the same basis. This results in an owner receiving bids which are more just and equitable to all concerned.

The agreement to tell one another what has been done simply provides for a systematic interchange of information which is bound to come out anyway.

The obligation is so fair and works out so many good results that the trickiest competitor in the end finds it to his advantage to live up to it.

From the fact that brick companies have been prone to suspect their competitors of stooping to crooked methods and trying to cover up their misdeeds, and from the further fact that an open-price association is intended to establish confidence and square dealing, it is essential that copies of signed orders or contracts setting forth all details, should be filed with the secretary for the inspection of all members.

The honest man can have no objection to this. A refusal on the part of anyone lays him open to the suspicion that he has lurking about him a hidden intention not to play the game squarely himself.

Both the dishonest man and the honest one can soon convince themselves whether all are laying their cards face up on the table.

The sales of each company should be reported to the secretary daily. This enables all the dealers to keep their fingers on the pulse of the industry as a whole in their community. No harm can come from this and much good can be realized.

The monthly reports of the secretary will show whether the business as a whole is below normal, and if so it will immediately become apparent that there is nothing to be gained by robbing Peter to pay Paul.

CONDUCTING THE MEETINGS

Meetings should be held weekly in order that all matters of mutual interest may be freely discussed.

The by-laws should provide a penalty of sufficient size for failure to attend meetings.

The responsible man in the business who has charge of the sales should be appointed as director for that company and not someone lacking due authority.

Any violation of the code of ethics or other things agreed upon should be reported and thrashed out to a final and complete understanding, however unpleasant it may prove, so that there will be a clean slate for the next week.

In these meetings and in fact at all times, there should be no hedging or covering up, and each member should constantly bear in mind that distrust begets distrust and confidence begets confidence.

The acts of salesmen should be gone into thoroly and a definite understanding had that each firm is responsible for the acts of its salesmen.

Publicity is a cardinal principle in these associations. Everything must be done openly. Both the safety and the strength of the association lie in publicity.

The more your customers are told of the association and its workings, the more they will respect you and become willing to pay you a decent price for your material and services.

In the past every dealer has been hoeing his own row alone—he has been absolutely in the dark as to what his competitors were doing. The buyer has held all of the cards in the deck and the brick man has not even had a look at the deuce.

Under the open-price policy the dealer holds the cards but he is willing to turn them face up to his customers.

The dealers have only themselves to blame for the demoralized condition of the brick business in the past and the customer should not be criticised if he has played the game with a marked deck, furnished by the dealer himself.

All of the books and files of every member should be open to inspection by the secretary to settle questions as to whether rebates or discounts have been allowed or code or ethics violated.

To make a satisfactory try-out of the plan the members should tie themselves together for a definite period of time —a term of years—by demand notes as a guarantee for the payment of dues and support of the association.

There is a well-known physical law that for every force or action there is a similar reaction. This law underlies every science, including industrial activities. It is easy to see that the law applies to the brick business, that for every act, word or thought, there is a reaction upon the person, organization, state or nation from which it goes forth.

If this is true, then ignorant competition between competitors, or between the buyer and seller, means unnecessary waste, and improved industrial conditions can be brought about only thru some co-operative plan whereby the one gives up to the other.

CREDIT BUREAU LEVER TO FORCE PAYMENTS

One of the important features of an association of this kind is a credit bureau.

The credit of a customer is usually given very little thought as most of the stress is placed on getting the order which in reality is of no value until you have received payment in full for material furnished.

How are we to guard against accumulating a lot of undesirable accounts on our ledgers? By the secretary checking over your books monthly, drawing off a list of all accounts past due and writing such delinquents that it will be necessary for him or them to pay up if they do not wish their credit rating impaired among the building material dealers.

If the first letter fails to bring the desired results in ten days a second reminder is sent. This usually is all that is required to make Mr. Contractor produce with a check.

If, however, these letters have made no impression, then the secretary notifies the customer that further credit will not be extended until he has settled in full his past due indebtedness with members of the association.

The establishing of a credit bureau has a most stimulating effect on the building business as a whole. It compels the contractors to watch their outstanding accounts more closely and gives them an opportunity to press their clients when an account becomes due.

Quite a few large contractors grow careless in taking care of their obligations and resent having their attention called to it, but since the formation of the credit bureau, pay promptly and admit it is of great value to them.

The unscrupulous contractor who has been securing material from the dealers with no honest intention of ever paying for it, can not practice his questionable methods.

Fewer liens are filed and the building public is better protected.

There are a good many open-price associations thruout the country and from all reports every one of them is working successfully.

The prosaic, yet eloquent facts disclosed are, that the one thing desirable in all lines of business is being accomplished thru co-operation, that of making money for all concerned.

RUNNING *a* HEAT BALANCE *on a* PAVING BRICK KILN

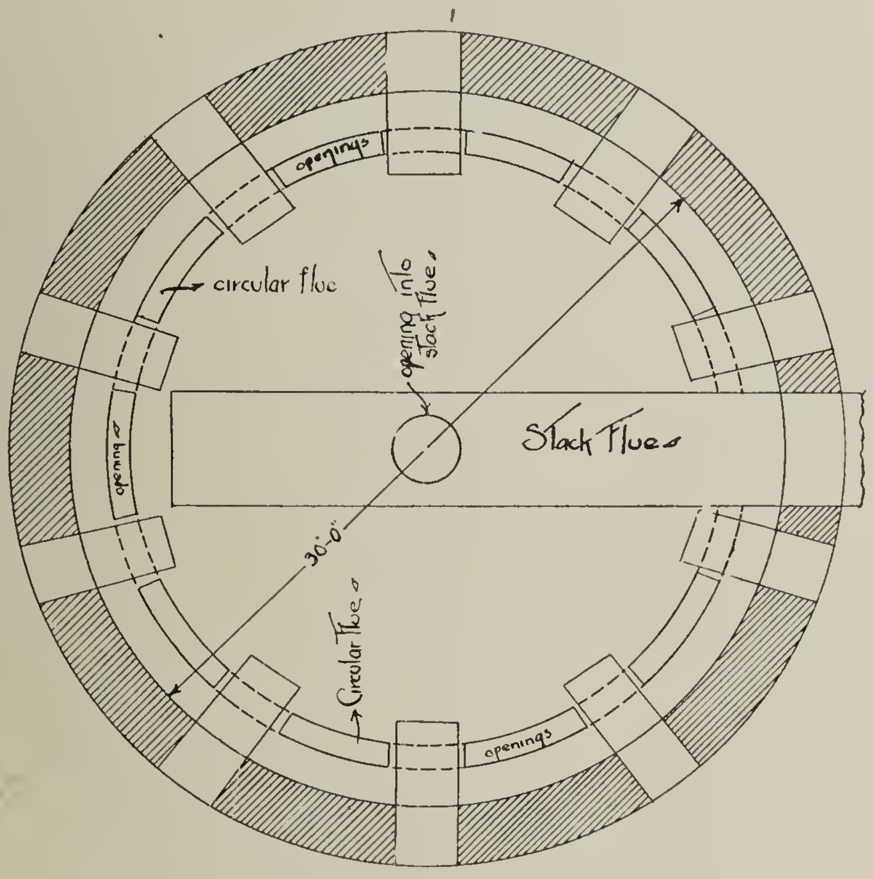
A Shorter Time of Burning, a Saving in Fuel, and a Better and More Uniform Product Resulted from the Test Burn Described Here in Detail

By S. C. Karzen

Superintendent American Sewer Pipe Co., Uhrichsville, Ohio

THE OBJECT of running a heat balance on a paving brick kiln is primarily to obtain a better production if possible and one that will give better rattler and absorption tests; second, to cut down the fuel cost per ton of ware; and third, to shorten the time required for burning. The heat balance represents a complete record of the burn and should include besides the temperature and air excess, a record of the amount of fuel used each day, atmospheric conditions both in and outside of the kiln, the weight of ware set, the temperature of stack gases, and all other data which would be of assistance at a later date in duplicating the operation.

I believe it would be of interest to describe a heat balance which I conducted on a paving brick plant in the Ohio River Valley district. The burn was made in a round downdraft kiln, and the ware (paving brick) was manufactured from number two fire clay.



Showing Plan of Flue System in Paving Brick Kiln on Which Heat Balance was Made. Note the Poor Arrangement of the Openings Leading Into Outside Circular Flue, Between Fireboxes.

The normal length of the burning period at this plant ranged from twelve to fourteen days and the object of the heat balance was not only to shorten this amount of time as much as possible, but also to bring about a reduction in the amount of coal consumed. The results of the heat balance disclosed that not only was the balance a complete success in the matter of saving time and fuel, but it also indicated that a system of burning could be installed which would insure uniform results, give the superintendent better supervision over the burn, and do away with the personal element which often enters into the work to a great extent. Also, besides the reduction in time and fuel made possible, the kiln capacity was increased and the product itself made in a more uniform character.

In proceeding with the heat balance, a careful investigation of several finished burns was made before active work was commenced, so as to obtain a general idea of the average results being obtained and to determine the possible causes for them. Also, this preliminary investigation tended to disclose possibilities which might arise to hamper the progress of the work.

It was found in the preliminary investigation that in setting the ware between the bags a space of from ten to twelve inches was left between the ware and the kiln walls. Furthermore, the openings in the spider flues were directly under these open spaces. The bags themselves were low and the setting high (32 courses) and tight, being platted on the sides, and consequently a perfect flue was formed over the low bag walls and down between the kiln walls and the brick directly into the spider flue opening. These conditions were made even poorer by having a small well hole in the center and flue holes proportionately large.

Before proceeding with the burn, therefore, the following changes in the construction of the kiln were made:

(a) The well hole was enlarged from eighteen to twenty-two inches in diameter.

(b) The spider flue openings were reduced from seven by thirty-eight to six by eighteen and one-half inches.

(c) The floor between the bags was made perfectly tight.

(d) The bag walls were raised from four feet six inches to six feet six inches.

(e) The arches were thrown over the fire holes to prevent rain from falling directly into the fire boxes as well as to make it possible to use doors.

(f) A pyrometer was installed. The couple was placed as near the crown hole as possible, and the cool end protected as much as possible from radiated heat.

(g) A damper was placed in the stack flue.

(h) Five settle holes were placed in the kiln crown.

The kiln on which the heat balance was made was set with hill-side paving block for the six bottom courses and the remainder of the kiln set with wire-cut brick. The total setting was thirty-two courses high, battered back only seven courses from the top on the fire ring. The setting was rather poor and was conducive to the throwing of an unusually high fire ring into the bags. The brick, which were made of average mixture of clay and grey and blue rock, was set wet in the kiln.

Before firing the kiln a curve was drawn up, which it was intended to follow during the burn and which is shown on the accompanying diagram, being marked "Proposed Burn." However, we experienced some difficulty during the oxidation period, as the curve marked "Actual Burn" shows. As I have already stated in a previous article, it is necessary to find the best temperature for efficient oxidation. As we had only this one burn to make, and since the average oxidation temperature on the plant ranged around 1,100 deg. Fahr. we decided that this temperature would be the best at which to oxidize our ware. In the burning process, however, we found that it was entirely too high, and the curve clearly pictures how long it took us to obtain clear trials during this burn. The curve marked "Proposed Future Burn" shows about where we would have placed our oxidation temperature for the next burn.

DIVISION OF THE BURN

Having the kiln set and the method of procedure clearly in mind, we were ready to start the burning, which we divided into five (parts) periods. These periods being watersmoking, heat raising, oxidation, rapid heat raising, and vitrification.

The watersmoking period, which included temperatures from 80 to 212 deg. Fahr. was completed in fifty-nine hours. The kiln was held below 200 deg. Fahr. for twenty-four hours, one shovel of coal being fired every one and one-half hours. durnig which period the doors and dampers were left open. The heat was then raised at the rate of fifteen degrees per hour until 700 deg. Fahr. was reached, one and one-half shovels being fired every hour.

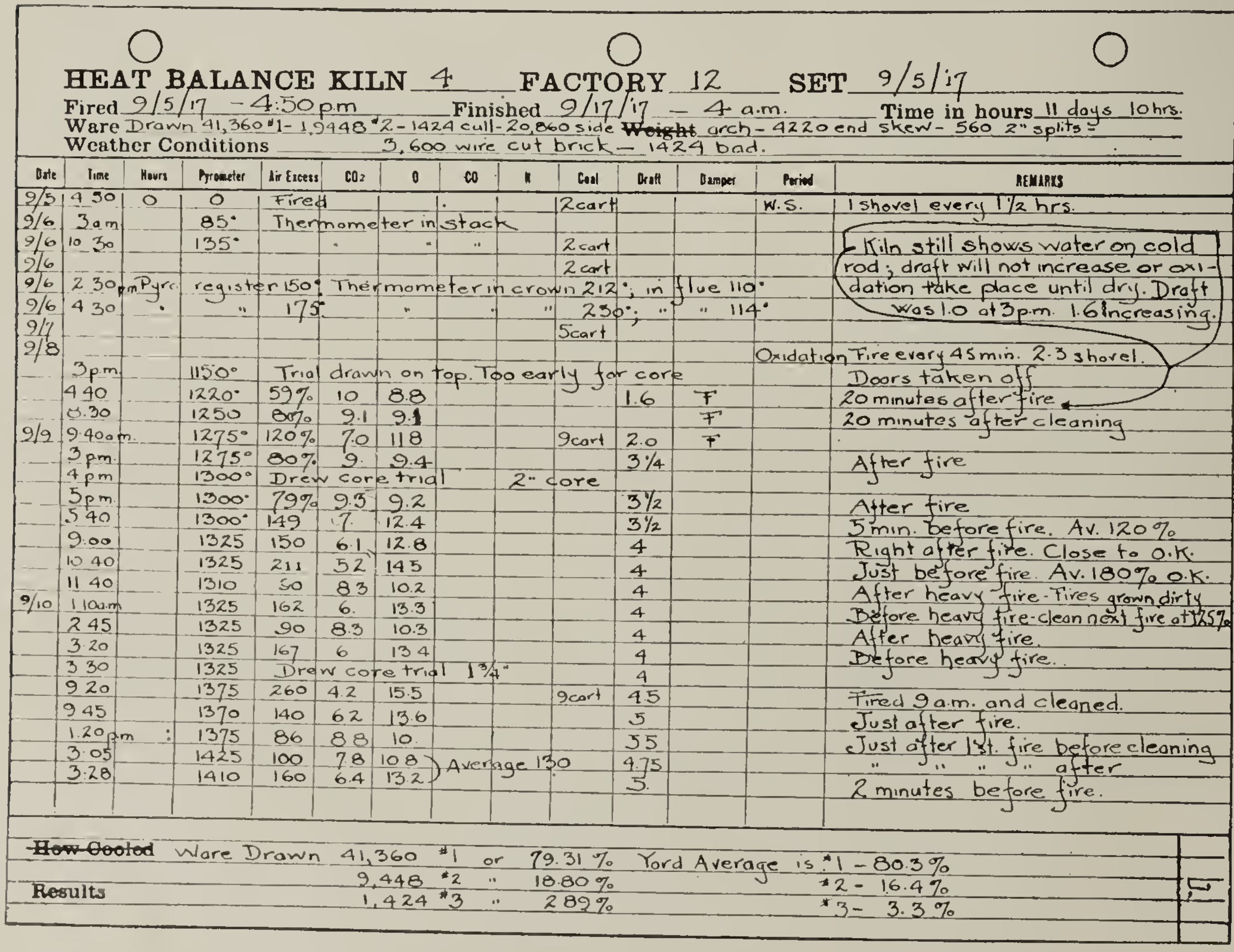
The second, or heat raising period, which we designated for temperatures from 212 to 1,150 deg. Fahr. was finished in nine hours. By testing the kiln with an iron rod we found that it was not perfectly dry in the flue, probably due to the fact that the water of chemical composition was coming off, but we proceeded to raise the heat at the rate of fifty degrees each hour, firing three shovels of coal every forty-five minutes. The draft was full and the dampers were closed.

The oxidation period, which included temperatures from 1,150 to 1,400 deg. Fahr. required one hundred and ten hours to complete. We oxidized it to a high temperature, it being 1,300 or higher, and consequently proved a difficult matter to burn out the core and to hold this temperature, three shovels of coal were being fired every forty-five minutes. The fire holes were cleaned four times daily.

The fourth, or rapid heat raising period, required fifteen hours and included temperatures from 1,400 to 1,975 deg. Fahr. The settle was taken at this point and when the last oxidation trial was drawn it showed a clear kiln and the doors were closed, the dampers dropped to such a position that a reading of four was obtained on the draft gauge. During this time the kiln was fired every thirty or forty minutes with three shovels of fuel and the heat raised to a temperature of 1,975 degrees at the rate of about fifty degrees each hour. A settle measurement was taken each six hours until the kiln started to shrink.

The last, or vitrification period, of the burn covered the temperatures of 1,975 to 2,075 degrees and required thirty-two hours to complete. The temperature was held at about 2,000 degrees for twenty-four hours, the settle being taken every three hours. The heat was raised to 2,025 or 2,050 degrees and held there until the finish. The final hot settle was 6¾ inches. The fire holes, during this stage and the preceding one, were cleaned four times daily.

In cooling the kiln the regular yard method was used. It was allowed to rest on the last fire for twelve hours and then the damper was lowered for thirty-six hours. The damper was then drawn out to its full extent and the crown holes were opened. Six hours later, one-fourth of the kiln door was pulled down and twelve hours after this the whole door was opened. The kiln was drawn on the eighth day; it was cool enough to draw 2 days earlier.



HEAT BALANCE KILN 4 **FACTORY** 12 **SET** 9/5/17
Fired 9/5/17 - 4:50 p.m **Finished** 9/17/17 — 4 a.m. **Time in hours** 11 days 10 hrs.
Ware Drawn 41,360 #1 - 1,9448 #2 - 1424 cull - 20,860 side ~~**Weight**~~ arch - 4220 end skew - 560 2" splits =
Weather Conditions 3,600 wire cut brick — 1424 bad.

Date	Time	Hours	Pyrometer	Air Excess	CO2	O	CO	N	Coal	Draft	Damper	Period	REMARKS
9/5	4 30	0	0	Fired					2cart			W.S.	1 shovel every 1½ hrs.
9/6	3 am		85°	Thermometer in stack									
9/6	10 30		135°		"	"	"		2 cart				Kiln still shows water on cold rod; draft will not increase or oxidation take place until dry. Draft was 1.0 at 3p.m. 1.6 increasing.
9/6									2 cart				
9/6	2 30 pm	Pyro.	register 150°	Thermometer in crown 212°; in flue 110°									
9/6	4 30	"	"	175°	"	"	"		230°;	"	" 114°		
9/7									5cart				
9/8												Oxidation	Fire every 45 min. 2-3 shovel.
—	3p.m.		1150°	Trial drawn on top. Too early for core									Doors taken off
—	4 40		1220°	59%	10	8.8				1.6	F		20 minutes after fire
—	5.30		1250	80%	9.1	9.1					F		20 minutes after cleaning
9/9	9.40 a.m.		1275°	120%	7.0	118			9cart	2.0	F		
—	3 pm.		1275°	80%	9.	9.4				3¼			After fire
—	4 pm		1300°	Drew core trial				2" core					
—	5pm.		1300°	79%	9.5	9.2				3½			After fire
—	5 40		1300°	149	7	12.4				3½			5 min. before fire. Av. 120%
—	9.00		1325	150	6.1	12.8				4			Right after fire. Close to O.K.
—	10 40		1325	211	5.2	14 5				4			Just before fire. Av. 180% O.K.
—	11 40		1310	50	8 3	10.2				4			After heavy fire - Fires grown dirty
9/10	1 10 a.m		1325	162	6.	13.3				4			Before heavy fire - clean next fire at 125%
	2 45		1325	90	8.3	10.3				4			After heavy fire.
	3.20		1325	167	6	13 4				4			Before heavy fire.
	3 30		1325	Drew core trial 1¾"						4			
	9 20		1375	260	4.2	15.5			9cart	4.5			Fired 9 a.m. and cleaned.
	9 45		1370	140	6 2	13.6				5			Just after fire.
	1.20 pm	:	1375	86	8 8	10.				5 5			Just after 1st. fire before cleaning
	3.05		1425	100	7.8	10 8	Average 130			4.75			" " " " after
	3:28		1410	160	6.4	13.2				5.			2 minutes before fire.

~~**How Cooled**~~ Ware Drawn 41,360 #1 or 79.31 % Yard Average is #1 - 80.3 %
9,448 #2 " 18.80 % #2 - 16.4 %
Results 1,424 #3 " 2.89 % #3 - 3.3 %

Complete Record of Burn Including Part of Oxidation Period

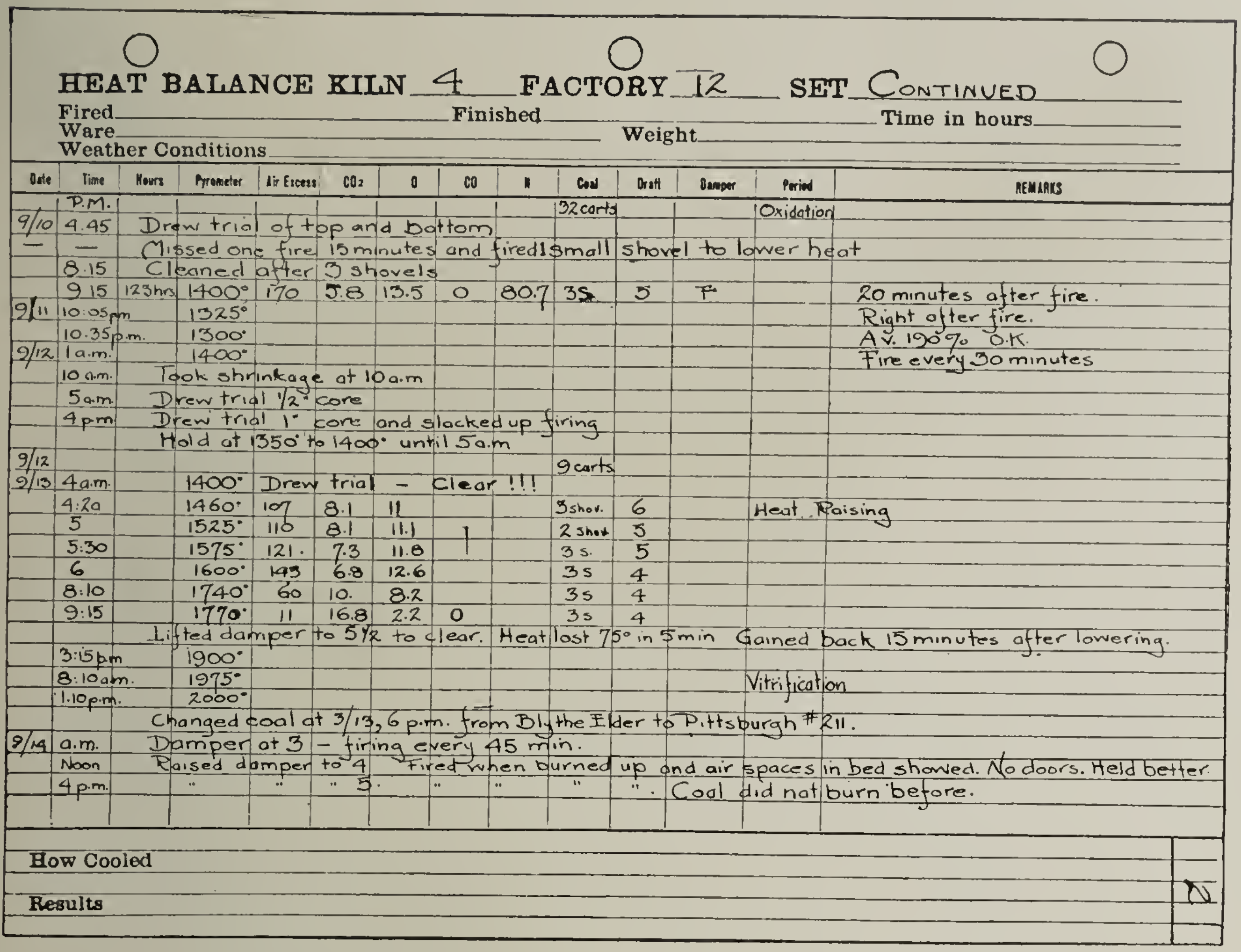
CONCLUSIONS REACHED FROM BALANCE RESULTS

A study of the results obtained from this test burn led to the following conclusions:

1. The method used for watersmoking could not have been shortened unless the brick were very dry when set.

2. The heat rising was accomplished very easily and with good results and for this reason the methods followed should be practiced in future burns. This period was completed in much less time than was usually required on this plant.

3. The oxidation range should not be more than 1,050 to 1,100 degrees in order to obtain the best results. We attempted to burn out the core at from 1,300 to 1,400 degrees and it required one hundred and ten hours. In previous burns the core was removed at a low red heat of about 1,050 or 1,100 degrees in thirty-six hours less time. Burns in which the oxidation range was held at a still lower temperature required a longer time for completion. Experience in burning other clays, lack of opportunity for experimentation on this clay, and the advice of experienced authorities led to the use of the oxidation temperature of 1,300 to 1,400 deg. Fahr. A poor draft during the first part of the period also helped to prolong the oxidation period.



HEAT BALANCE KILN 4 FACTORY 12 SET Continued
Fired Finished Time in hours
Ware Weight
Weather Conditions

Date	Time	Hours	Pyrometer	Air Excess	CO2	O	CO	N	Coal	Draft	Damper	Period	REMARKS
	P.M.								32 carts			Oxidation	
9/10	4.45	Drew trial of top and bottom											
—	—	Missed one fire 15 minutes and fired 1 small shovel to lower heat											
	8.15	Cleaned after 3 shovels											
	9.15	123 hrs	1400°	170	5.8	13.5	0	80.7	3S	5	F		20 minutes after fire.
9/11	10:05 pm		1325°										Right after fire.
	10.35 p.m.		1300°										Av. 190% O.K.
9/12	1 a.m.		1400°										Fire every 30 minutes
	10 a.m.	Took shrinkage at 10 a.m											
	5 a.m.	Drew trial 1/2" core											
	4 p.m	Drew trial 1" core and slacked up firing											
		Hold at 1350° to 1400° until 5 a.m											
9/12									9 carts				
9/13	4 a.m.		1400°	Drew trial – Clear !!!									
	4:20		1460°	107	8.1	11			3 shov.	6		Heat Raising	
	5		1525°	110	8.1	11.1			2 shov.	5			
	5:30		1575°	121.	7.3	11.8			3 s.	5			
	6		1600°	143	6.8	12.6			3 s	4			
	8:10		1740°	60	10.	8.2			3 s	4			
	9:15		1770°	11	16.8	2.2	0		3 s	4			
		Lifted damper to 5 1/2 to clear. Heat lost 75° in 5 min Gained back 15 minutes after lowering.											
	3:15 pm		1900°										
	8:10 a.m.		1975°									Vitrification	
	1.10 p.m.		2000°										
		Changed coal at 3/13, 6 p.m. from Blythe Elder to Pittsburgh #211.											
9/14	a.m.	Damper at 3 – firing every 45 min.											
	Noon	Raised damper to 4				Fired when burned up and air spaces in bed showed. No doors. Held better.							
	4 p.m.		"	"	" 5.		"	"	"	" .	Coal did not burn before.		

How Cooled

Results

Complete Record of Burn from Oxidation to Vitrification Period

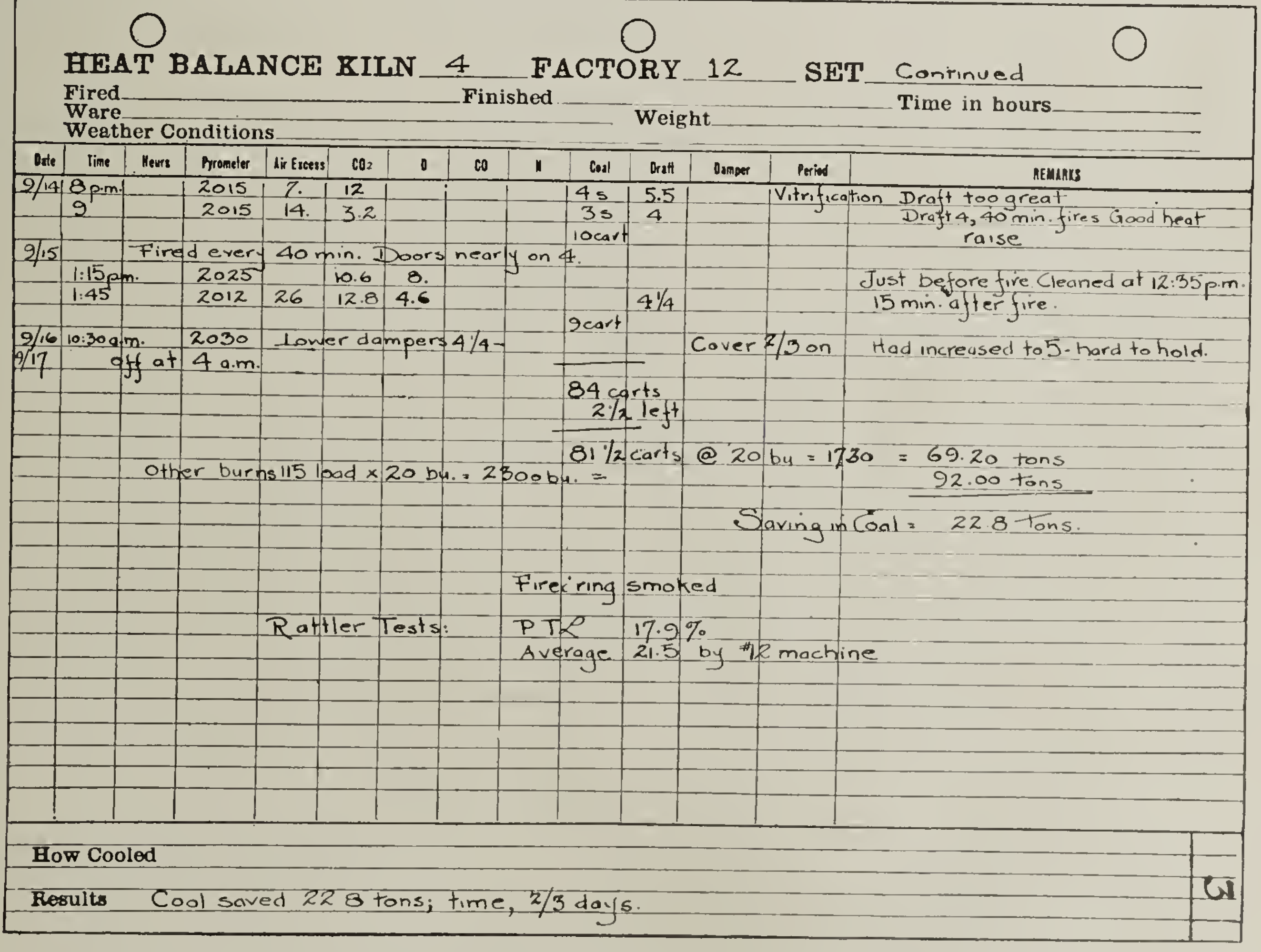
4. The heat raising period was accomplished best when a draft reading of four was obtained. This period was guided by the Orsat and draft gauge. The door of the furnace was used to regulate draft and atmospheric conditions in the kiln with good results.

5. The temperature of vitrification, or 2,050 degrees, was found to have been a little high. The top brick showed a trifle too high while the middle and bottom were good. The top would not have been hardened so much if the high temperature was kept at from 2,000 to 2,025 degrees. The

heat distribution thruout the kiln was very good; in fact, considerably better than any previous burn made on this yard. This tends to show that the burn had not been rushed, and proves that a shorter period is not detrimental to the blocks. Pavers could have been burned well clear at the bottom of the kiln, as is shown by the samples of wire cuts from the bottom courses. The heat distribution from the side to the center of the kiln was very good, as is shown by the rattler and absorption tests, contained in the accompanying chart. Hence, it is concluded that the method of regulation was correct. The draft was all right, as shown by the general color of the ware, with the possible exception of the fire rings. The smoking which occurred may be overcome by keeping clearer fires and firing at longer intervals; of course by firing alternate furnaces, better results can be obtained.

6. By the results of these tests, four days seems to be sufficient time to finish a kiln off after the core has been oxidized out. This includes heat raising and soaking the heat at the bottom. Ten or ten and one-half days should be about the proper time for the complete burn, according to figures.

7. The results of our physical tests indicates that the brick become glassy on vitrifying and rattle poorly. On the other



HEAT BALANCE KILN 4 FACTORY 12 SET Continued
Fired Finished Time in hours
Ware Weight
Weather Conditions

Date	Time	Hours	Pyrometer	Air Excess	CO2	O	CO	N	Coal	Draft	Damper	Period	REMARKS
9/14	8 p.m.		2015	7.	12				4 s	5.5		Vitrification	Draft too great
	9		2015	14.	3.2				3 s	4			Draft 4, 40 min. fires Good heat raise
									10 cart				
9/15		Fired every 40 min. Doors nearly on 4.											
	1:15 p.m.		2025		10.6	8.							Just before fire Cleaned at 12:35 p.m.
	1:45		2012	26	12.8	4.6				4 1/4			15 min. after fire.
									9 cart				
9/16	10:30 a.m.		2030	Lower dampers 4 1/4 –							Cover 2/3 on		Had increased to 5 - hard to hold.
9/17		off at	4 a.m.										
									84 carts				
									2 1/2 left				
									81 1/2 carts @ 20 bu = 1730 = 69.20 tons				
		Other burns 115 load x 20 bu. = 2300 bu. =											92.00 tons
											Saving in Coal = 22.8 tons.		
								Fire ring smoked					
				Rattler Tests:				P T L		17.9%			
								Average		21.5 by #12 machine			

How Cooled

Results Cool saved 22.8 tons; time, 2/3 days.

The Finishing Period. "Brick and Clay Record" Will Supply, at a Nominal Cost, Heat Balance Sheets To Those Desiring Them.

hand a soft burned brick will also rattle poorly. The medium between these limits can not be determined properly by the eye. A pyrometer and settle measurements are necessary for determining the proper temperature and finish of the burn. The results of rattler and absorption tests made on brick from this burn are shown in a table accompanying this article. A complete schedule of the burn with all operations recorded is also shown on the record cards which are reproduced.

BURN SHORTENED AND FUEL SAVED

The concrete results which were obtained by conducting this heat balance shows a reduction in the time of burning from thirteen days to eleven days and the hours, or a gain of one and one-half days, and reduction in coal and consumption from fifty-five tons to forty-one tons, meaning a saving in fuel of fourteen tons. The time saving of one and one-half days must be doubled by oxidizing the cores out of the war at the proper temperature of from 1,050 to 1,100 deg. Fahr.

As stated at the beginning of the article, the results of the burn show that a system of burning can be installed which will insure uniform results, give the superintendent better supervision over the burn, and do away with the personal element which often enters into the work. Also, it will effect an increase in the kiln capacity and an appreciable saving of fuel, besides producing a more uniform product.

The installation of such a system of burning, capable of producing these desirable results would include: (1) the installation of a pyrometer system; (2) slight repairs on the kiln, including dampers, alteration of flue openings, widening and covering of flue holes so that doors can be used and raising the bag walls; and (3) carrying on the burn in the manner outlined.

THE NEW DEMURRAGE RULE JOKER

THE NEW DEMURRAGE REGULATIONS, ordered by Director General of the Railroads McAdoo, and issued upon one day's notice by special permission of the Interstate Commerce Commission, provide, not only for a substantial increase in rates and the abrogation of the average agreement, but also carry a very important "joker" not mentioned in the original announcements given out at Washington when the general basis of the changes which become effective on January 21 was made public. The joker in question is the elimination of the so-called bunching rule under which accumulated deliveries due to railroad delay or irregularity of service constituted a cause for the waiver or cancellation of car service charges.

UNIFORM CODE PROVISIONS

The Uniform Code in effect prior to January 21 provided as follows:

"When by reason of delay or irregularity of the carrier in filling orders, cars are bunched and placed for loading in accumulated numbers in excess of daily orders, the shipper shall be allowed such free time for loading as he would have been entitled to had the cars been placed for loading as ordered.

"When, as the result of the act or neglect of any carrier, cars destined for one consignee, at one point, are bunched at originating point, in transit, or at destination, and delivered by the carrier line in accumulated numbers in excess of daily shipments, the consignee shall be allowed such free time as he would have been entitled to had the cars been delivered in accordance with the daily rate of shipments. Claims to be presented to carrier's agent within 15 days."

The working of this rule can be illustrated by taking the case of a shipper with a three-car length switch who orders thirty cars for loading to be placed at the rate of three a day—his capacity. If the carrier delivers ten in one day, it is obvious that these cannot be handled within the free time allowed; indeed, in the case cited, seven of these cars would be held on the carrier's tracks on constructive placement. So, too, where there has been a delay in transit and cars leaving point of origin over an interval of several days are delivered or tendered for delivery in one day to the receiver of the freight, the chances that he will be able to unload the entire lot within the forty-eight hours' free time allowed under the rules are remote, altho the disability under which he labors arises thru no fault of his own, but from the fault of the railroad company.

Recognizing the patent injustice of compelling the shipper to pay demurrage charges under such circumstances, the rule substantially as quoted above was agreed upon at the time the Uniform Code of Demurrage Rules was adopted in 1909. In passing, it may be remarked that this code was framed by a committee headed by Franklin K. Lane, then a member of the Interstate Commerce Commission and now Secretary of the Interior, and was the outcome of several months' conference between shippers, carriers, and railroad commissions. In speaking of this rule, this committee said:

"Bunching is a real difficulty for which adequate relief should be provided. * * * The rule rests upon a firm legal basis for it gives the consignee (or consignor) just what he is lawfully entitled to, viz., such time for unloading (or loading) as he would have enjoyed if the carrier had not been in default."

BUNCHING NOT NOW A RAILROAD ERROR

The McAdoo code, however, carries this note to the rule covering causes for waiver or cancelation of car service charges:

"Bunching cars and delivering in excess of daily shipments is *not* a railroad error within the meaning of this rule."

Under the average agreement, while shippers electing to work thereunder surrendered their right to waiver of charges for bunching and, in part, for weather interference, the losses here were compensated by the opportunity to offset them with credits gained for expedited loading and unloading. The abrogation of the average agreement removes this opportunity and, while preserving weather interference rights to the shipper, gives him no relief from bunching. In view of the existing irregularities in transportation service and the many delays arising from congestion and disruption of the normal flow of traffic, the elimination of the bunching rule will press heavily upon the shipper, whether consignor or consignee.

The only ways in which the shipper can escape payment where cars are not released within the prescribed time are:

1. When the weather is such that it is impossible to employ teams or men in loading or unloading or to place in or remove freight from the cars without serious injury to the lading.

2. When shipments are so frozen in transit that unloading is impossible.
3. When cars cannot be reached because of high water or snowdrifts.
4. When carrier demands payments of charges in excess of tariff authority.
5. When delayed or improper notice of arrival or placement is given.
6. When railroad errors prevent proper tender or delivery.
7. When delayed by United States Customs.

These exemptions are safeguarded with strict rules governing notice to the carrier and the sufficiency of the cause for waiver.

After the expiration of the free time allowed, cars are subject to the following charges: $3 for the first day; $4 for the second; $5 for the third; $6 for the fourth; $7 for the fifth; $8 for the sixth; $9 for the seventh, and $10 per car per day for the eighth and each succeeding day.

How Garfield Edict Hits Clay Products Industry in Ohio Producing District

Practically every concern in the clay products industry of Cleveland and northern Ohio came to a standstill during the five days closing period as ordered by Federal Fuel Administrator Garfield, and will continue to do so during the next ten Mondays, unless the order is modified. With one accord all are in favor of the movement, if it really results in improvement of the fuel situation, as is predicted. On the other hand, it is claimed that the loss, while big, will not be felt so keenly at this time, because building operations in this district are now at a low ebb.

"The five-day order came at a time when it has little effect upon the paving brick industry," says Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, "because manufacture is handicapped by the severe weather conditions. The Monday ruling will not be a great hardship, altho it is bound to reduce the output some. It will not affect shipments, however, as there are very few at this time of year anyhow."

It is predicted, however, that if this one day a week suspension order is carried beyond the ten weeks' period, or is increased to two days a week during this period, the move will be fatal to some branches of the industry. Receipt of the order here resulted in all paving brick interests getting together to work out the ways and means of meeting it, and it was seen then that while it is doubtful if a profit would be made with this suspension often working days during the two months, no loss would be entailed.

"The situation was so serious that the order of Dr. Garfield was the only thing that would help," says H. C. Moatz, of the Medal Brick Co. "When the order was received here our regret was that the situation had developed to such a stage that such drastic measures were necessary. If this plan will enable the roads to get hold of themselves, for ships to get off New York and other Atlantic ports, for cars to get to the mines, then it is indeed a worth while move.

"Of course the chief object is to move along lines that will make for efficiency and consequently help win the war. To this end the plan that will work best in getting coal out of the ground and to the consumer will be a big remedy. I believe this order is justified as a temporary remedy at least."

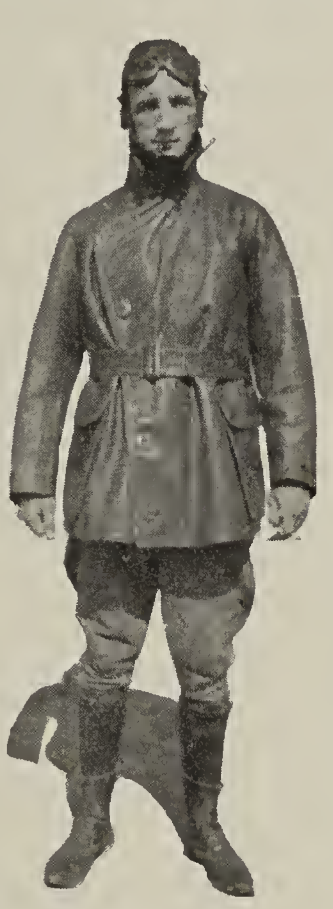
Mr. Moatz recently returned from New York and other eastern points, and he reports the congestion, given by Garfield as the reason for stopping industry, is even worse than most who are not near the seaboard realize.

All other clay products plants and offices in Cleveland will obey the Monday closing order.

"The brick industry, like all others, must live up to all those orders of those in power," says Sales Manager Shea, of the Barkwill-Farr Co. "We must not only give it obedience, but our hearty support as well. The Barkwill-Farr Co., of course, has been shut down on the days prescribed. We do not believe, however, the shut down will have any serious or lasting effect. In an industry such as brick, the members can make up for lost time by working doubly hard on the days on which they can operate. Just how this ruling will affect future orders is problematical. That the Garfield move will be a good one seems to be proved by the fact that car congestion has already been relieved."

"Buy Farr the Best" Aviator in France

Events move rapidly in these war times, as is proved by a bit of correspondence passing between *Brick and Clay Record* and its Cleveland correspondent.



Jack Herbert

About four weeks ago our Sixth City correspondent informed us that Jack Herbert, formerly of the building department of the Barkwell-Farr Co., had completed his ground training course in the aviation section of the Signal Corps and was then engaged in actual aerial work at the Kelly Field, near San Antonio, Texas. However, Mr. Herbert's status at that time was quite uncertain. He had received his appointment as sergeant, but had not been commissioned first lieutenant, a degree which Uncle Sam confers upon all those who successfully complete his flying course and which is automatically received when the student is ready to meet his first Boche adversery.

Desiring a little more definite information, we held up the item for about two and one-half or three weeks and then got in touch again with Cleveland. The return mail informed us that Mr. Herbert had received his commission as first lieutenant and if not already in France was "somwhere on the Atlantic," having sailed during the second week of January.

He had expected to be home on a few weeks' furlough, but instead sent a telegram telling of his departure.

Important Face Brick Meeting

The board of directors of the American Face Brick Association are to hold a meeting at Chicago, on February 5 and 6, at the Hotel La Salle, beginning at 10:30 A. M., February 5. All members of the association are invited.

NORTHWEST TAKES STEPS TOWARD OPEN PRICE

Tenth Annual Meeting Authorizes Appointment of Committee to Look Into Feasibility of Plan and Formulate Recommendations. Program of Unusual Merit, Covering Timely Topics

A BUSINESS-LIKE CONSIDERATION of immediate and pressing problems characterized the deliberations of the Northwestern Clay Association as it met in its tenth annual convention at the West Hotel, Minneapolis, January 17 and 18. Some idea as to the timeliness of the program may be had when it is learned that the program committee arranged to have Hon. J. F. McGee, fuel administrator for the state of Minnesota, speak on "The Coal Situation." Fate played strongly into the hands of the committee, for on the morning of the 17th announcement was made in the daily press of Dr. Garfield's order declaring a cessation of manufacturing operations for five days beginning the 18th and proclaiming every Monday for the next ten weeks a legal holiday. The result was a large and appreciative audience which listened to the judge with attentive ear and which bombarded him with questions after he had finished speaking.

PRESIDENT URGES PREPAREDNESS IN ADDRESS

B. Frank Pay, of Fowler and Pay, Mankato, Minn., president of the association, presented his annual address, after the convention had been called to order and the reading of last meeting's minutes had been dispensed with. Mr. Pay welcomed the members to the meeting and called attention to the important subjects on the program. He said that in traveling over the state he noticed how little clay products, comparatively speaking, were being used in construction work of all kinds and said that the manufacturers had a big job before them in promoting the sale of their wares on a larger and broader scale.

"Building operations thruout the Northwest have shown a great falling off during the last year," said Mr. Pay, "and the prospects for the immediate future are somewhat unsettled at this time. However, I cannot help but feel that there will be some building in this territory and it would be well for all manufacturers of clay products to be prepared. No doubt, at the termination of the world war building operations will become active and some portion of the large amount of money that will be in circulation will find its way into permanent buildings and investments, so it behooves all manufacturers of clay products to put their plants in order to secure their share of the business when this time comes."

BLAMES RAILROADS FOR COAL SHORTAGE

Word that Judge J. F. McGee was to speak on the fuel situation was circulated among the lumber dealers attending the Northwestern Lumbermen's Association convention in the West Hotel, and as a consequence many of them came in to hear the judge, who began by telling something of his experiences at Washington in connection with his efforts to get a sufficient amount of coal diverted to the Northwest to supply the immediate needs in that territory. That he succeeded in accomplishing what he set out to do along this line is indicated in the fact that there has been little suffering to date in that territory because of a lack of fuel.

The judge brought out the fact that the railroads were entirely to blame for the present fuel shortage and that they had fallen down badly in supplying cars to the mines. Since little or no bituminous coal is stored, it is a case of no cars, no coal. The judge said that he based this statement on information which he secured from the daily reports of the mines showing that they had been forced to work short time because of inability to secure cars in which to ship the product of the mine and that this condition had badly demoralized the organizations of the operators, so much so that they rapidly began to lose their best men and were therefore confronted with another difficulty, that of labor shortage.

BOATS SHOULD HAVE BEEN USED MORE

State Fuel Administrator McGee also said that the ore boats from Lake Superior in returning for cargoes from Chicago and Cleveland should have been utilized to a larger extent in carrying coal to northern Michigan and Minnesota points, but that owing to the inability of the railroads to deliver the coal to the docks in anything like a reasonable time for loading, it had not been possible to realize the greatest efficiency in water transportation. The railroads he said had accused the boat companies of refusing coal shipments, but this has been found to be untrue.

With regard to the present supply of coal and the prospects for next year's supply, it was stated that both in anthracite and in bituminous coal the supply this year was many thousands of tons short. The outlook for next winter, if the war continues is not any better than it was this winter and probably will be a great deal worse.

CAMPAIGN TO BURN WOOD UNDER WAY

The burning of wood, especially in the northern sections of the state of Minnesota was being urged, the judge said. He had found that in many homes in localities where wood was plentiful that it was thought too plebian to burn this kind of fuel. This he said was a foolish idea and should be done away with at once as it will be the means of saving a large amount of fuel to be used in sections where wood is not so easily obtained or where it could be had only at great cost, all out of proportion to its heating value. He said that the building of fire places in homes was being strongly recommended. This is encouraging news for the face brick manufacturer who ought to find this a good piece of promotion work for the sale of face brick mantels and fire places, as well as to the fire brick manufacturer who can supply the fire brick for these fire places.

The judge strongly defended Dr. Garfield's drastic order, declaring that it was a necessity and should be strictly observed. One of the members asked him as to how he would regard a continuous kiln. He said that it was his intention to use "horse sense" in interpreting the order and believed that a continuous kiln would be exempt because to cease firing it with ware in the chambers would damage the ware and this was not the intention of the order. No one asked him about periodic kilns under fire nor dryers, so he said nothing about them.

SPEAKS ON LABOR SITUATION

D. D. Lescohier, superintendent of the Minnesota Commission of Public Safety, was the next speaker.

"There is no shortage of labor," said Mr. Lescohier, "that is, speaking from a quantity standpoint, but I think everyone here will agree with me that there is a distinct lack of quality workmen.

"High labor turnover is one of the worst problems manufacturers have to deal with and if that item can be reduced a way will be found to increase the supply of men."

The speaker gave some figures covering the Ford plant, showing that by careful study executives were able to reduce the labor turnover from nearly four hundred per cent. annually to somewhere around twenty-eight per cent. per annum. Reasons why workmen leave their positions was gone into in some detail, Mr. Lescohier telling of some of his experiences in learning the cause. An abusive foreman was cited as the cause for failure to keep men at one palnt, while proper housing conditions were said to have a very important bearing on the length of time a man would stay in a certain locality or town. On the other hand, the instilling of a spirit of loyalty into the men, making them feel that the plant was "their plant," was urged as a measure to prevent too frequent moving of men and the bonus system was given hearty endorsement as a means of promoting efficiency and good records for steady employment.

Some time ago the legislature authorized the establishment of three employment offices, one in Minneapolis, one in St. Paul and one in Duluth to assist in getting the man looking for work and the man with a job together. Mr. Lescohier stated that he thought Ohio had a better system of state employment offices. He said that there were seventy such offices in the Buckeye state with a central office at Columbus and that every day each office in the state reported to the central office by telephone stating what surplus of men or jobs they had, thus promoting the utmost efficiency in the moving of the available labor supply.

ENGLAND HAS GOOD EMPLOYMENT SYSTEM

"However," said Mr. Lescohier, "England goes that one better. It has over four hundred employment offices scattered thruout the British Isles, all working with a central office, and little difficulty is experienced in getting men in different trades and in various localities. That is the kind of system we ought to have over here."

Private employment agencies came in for a roasting, both from members in the discussion following the talk by Mr. Lescohier, and by the speaker himself. He said that they were the greatest cause for discontent among workmen that existed, since they profited on a large turnover, and stimulated it.

Undoubtedly, there will be a smaller supply of labor

(*Continued on Page* 254.)

IOWANS HOLD PROFITABLE MEETING

Problem after problem of immediate importance was brought up for discussion and thrashed out as fully as possible before being dismissed at the War Time Conference of the Iowa Clay Products Manufacturers Association, which was held in Des Moines, Ia., on January 23 and 24. The meeting in many respects resembled a college lecture in that the speaker, after having given his talk, had question after question fired at him for solution. This deviation from the usual procedure of a convention where papers are read proved to be very interesting and of course it was the best means of discussing these subjects which are at the present time of such vital importance to the clay manufacturer. Altogether there were about seventy-five present at this meeting, yet nearly every one took part in some of the discussions.

The conference opened with an address of welcome by President Hamilton of the Des Moines Chamber of Commerce. A welcome part of his address was his announcement that free show tickets would be distributed to all of those attending the convention.

A response was made to the above address by W. J. Goodwin, of the Goodwin Tile and Brick Co., Des Moines, Ia., president of the association. He emphasized the need for patriotism and urged a voluntary complete shutdown of clay plants if it was urgent to do so. Mr. Goodwin pointed out that the Iowa manufacturers for the most part were very fortunate in the recent rulings made on fuel supply for clay plants since most plants in Iowa were manufacturing drain tile which is allowed to go on uninterrupted in production.

W. G. Galvin of Rockford then started the discussions which followed by talking on the topic of "Car Shortage and Distribution." He told of how he had written letters to dealers asking for co-operation in shipments and by so doing gained favor in the eye of the car commission which was informed of this undertaking. A point brought out in the talks that followed under this discussion, was that in nearly every case where full car orders were not at first obtained a full capacity shipment was made if the case was presented in the proper manner to the buyer.

One of the liveliest and most interesting discussions of the conference then ensued after a very able talk by C. B. Stiver of the United States Treasury Department, in which he discussed income tax problems. Many of the men present had complicated tax problems to be solved, yet each one was very plainly explained in complete detail by Mr. Stiver.

Under another discussion S. G. Elton, of Richland, brought out the point that there was less labor available for the farmer than before, yet the need for greater production was imperative. The only way, as Mr. Elton said, to bring about a larger production was by getting a greater yield which could be done by tiling the farms.

In a discussion that followed it was proposed to ask the government to make a ruling to stop the manufacture of certain sizes of drain tile which could very easily be eliminated and thus decrease the stock pile and make production easier. However, in the debate that followed it was found that this idea would hardly be practical and hence the subject was dropped, at least for the present time.

After a talk on "Appraisals and Insurance" by W. F. Worcester of Milwaukee, Wis., Chas. Webster, Fuel Administrator for the State of Iowa spoke on the fuel situation. An important fact to clay products manufacturers who buy their coal from Illinois and other states outside of Iowa, was made known when it was stated that there was a possibility of a zone restriction ruling being passed which would mean that only short hauls would prevail and the consumer would be required to obtain their fuel from the nearest operator regardless of contracts, kind of fuel, etc. Mr. Webster urged that all plants stock up a supply of fuel during the months of March and April rather than wait for a drop in price later on. He expects the same fuel shortage to occur again next winter.

E. J. Anderle of Dayton, Ohio, read a paper on "Drying Clay Ware by a Producer Gas Fired Dryer," in which he tried to show that this type of dryer was the best and cheapest kind for drying clay ware. After the reading of this paper an interesting discussion took place on the cost of drying ware and it was found that very few of the manufacturers present actually knew the cost of operating the fans on their waste heat dryer.

A nominating committee which had been appointed by the president earlier in the meeting suggested the following officers for the coming year. For president—Harry S. Vincent,

(*Continued on Page* 249.)

* * *

U. *of* I. SHORT COURSE BIG SUCCESS

THE SHORT COURSE in Ceramic Engineering at the University of Illinois closed its two weeks' program on Saturday, January 19. The program of lectures was carried thru as planned and those in attendance at the course expressed themselves as thoroly satisfied with the results of their attendance. In spite of the disturbed industrial conditions at the present time, coupled with severe weather conditions which interfered greatly with traveling facilities, twenty-one men coming from ten states and representing eight different branches of the ceramic industries were in attendance at the course. In addition to the lectures given by members of the university staff, the following lecturers from outside contributed largely to making the course a successful one: A. V. Bleininger, of the Pittsburgh Laboratory of the United States Bureau of Standards; Prof. C. B. Harrop, of the Department of Ceramic Engineering, at Ohio State University; and Dwight T. Farnham, industrial engineer, of St .Louis, Mo.

At the smoker held on Thursday evening each member in attendance at the Short Course gave an interesting account of present conditions in his particular branch of the industry, especially with reference to the effects produced by the war. The following men were registered in the course:

Wm. M. Stoneman, Macbeth-Evans Glass Co., Pittsburgh, Pa.
J. B. Casey, manager Colfax Drain Tile Co., Colfax, Ind.
Leo. A. Behrent, Midland Terra Cotta Co., Chicago, Ill.
Glenn C. Purdy, Green Engineering Co., East Chicago, Ind.
Joseph W. Tomek, Table Rock, Neb.
E. Rainey, Carter Brick Co., Peoria, Ill.
Ira Caswell, Industrial Brick Works, Booneville, Ind.
G. L. Wilcox., Jno. Wilcox and Sons, McLean, Ill.
F. J. Helwig, Trinidad Brick and Tile Co., Trinidad, Colo.
Wm. M. Clark, chemist, Euclid Glass Div. of General Electric Co., Cleveland, Ohio.
George E. Burton, Okla. Geol. Survey, Norman, Okla.
Edw. Anderson, superintendent, Dayton Grinding Wheel Co., Dayton, Ohio.
M. T. Straight, Adel Clay Products, Adel, Iowa.
J. H. King, Colchester Brick and Tile Co., Colchester, Ill.
O. A. Harker, Jr., manager Dixie Brick and Tile Co., Puryear, Tenn.
J. B. Krehbiel, Advance Terra Cotta Co., Chicago Heights, Ill.
George Hayden, Jr., superintendent Ohio State, Brick and Stone Co., Shawnee, Ohio.
B. F. King, Colchester Brick and Tile Co., Colchester, Ill.
Leslie M. Newton, assistant superintendent, Dixie Brick and Tile Co., Puryear, Tenn.
C. J. Tiernan, Macomb, Ill.
J. R. Garden, president, Salem Brick Co., Salem, Va.

Instruction Staff and Students Attending the Short Course at the University of Illinois. The Three Fur-Capped Individuals Make Up the Regular Staff of the Ceramics Department.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

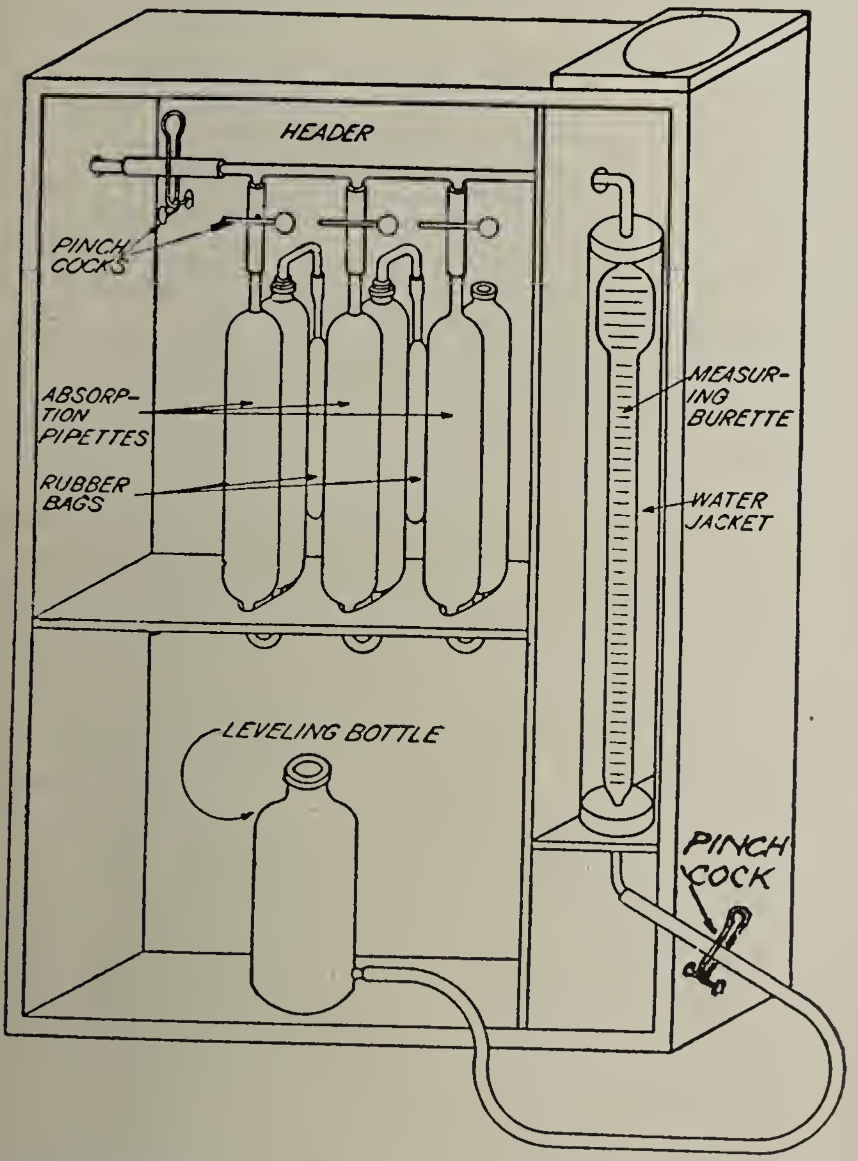
To Prevent Tools from Rusting

This is the time of the year when a good many plants are shut down and many tools lie around unused for a long period. To prevent the rusting of these tools a compound may be made by slowly melting together six or eight parts of pure hog's lard and one part of resin and stir until cool. This remains in a semi-fluid condition and is always ready for use. The resin tends to prevent rancidity and supplies an air-tight film. If this material be rubbed on a bright surface it will effectively protect and preserve the polish.

* * *

Operating the Orsat Apparatus

The manipulation of an Orsat apparatus is a comparatively simple operation. The instrument consists of a large measuring tube usually located at the right hand side of the instrument. This tube is frequently of lesser diameter at the lower part so as to admit of smaller graduations. The whole tube is graduated into 100 cubic centimeters and is surrounded by another tube containing water to keep the temperature constant. To the lower end of the measuring tube a connection is made by a long rubber tubing to a bottle containing water. A pinch cock is attached to the rubber tubing which is used to stop the flow of water in the bottle. By raising the bottle and opening the cock the water may be made to flow into the measuring tube or by holding the bottle in a lowered position and opening the cock the water may be caused to flow out of the measuring tube into the bottle.



The Orsat Apparatus Is Designed to Give a Volumetric Determination of the Ingredients Contained in Flue-Gas.

The upper part of the measuring tube is connected by means of capillary tubing to three double bulbs of about 100 cubic centimeters capacity. The connection between each of these bulbs and the capillary tubing may be closed by means of a stop cock. This capillary tubing is also fitted on one end with a tube for the introduction of the flue gas to be analyzed.

The flue gas is drawn into the apparatus by filling the measuring tube and capillary tubing with water, thus forcing out all of the air, making a connection with the vessel containing the flue gas, and then allowing the water in the tubing and measuring tube to run out by lowering the bottle. Usually 100 cubic centimeters of the gas are taken.

Now the stop cock connecting the first bulb and the measuring tube is opened while all of the rest are closed and the gas is forced into this bulb by raising the bottle containing the water. This bulb contains a solution of caustic potash (K_2O). By letting the gas in contact with this solution for a short time all of the carbon dioxide contained in it is absorbed. Now by passing the gas back into the measuring tube a lesser volume will be registered and the difference or the loss is equivalent to the amount of carbon dioxide that was originally in the flue gas.

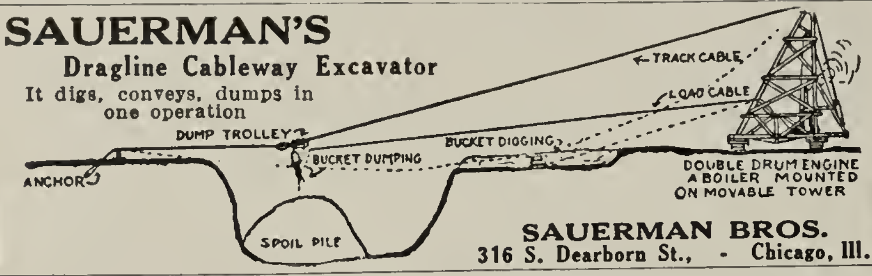
This same procedure is now followed except that the gas is forced into the second bulb, all other bulbs being disconnected. This bulb contains an alkaline solution of pyrogallic acid. The flue gas by remaining in contact with this acid for a few minutes loses all of its oxygen which is absorbed by the liquid. Then by passing the gas back into the measuring tube by lowering the bottle a new volume will be noted on the scale and the difference in readings between this measurement and the preceding one is equivalent to the amount of oxygen absorbed by the solution in the second bulb and hence it is equivalent to the amount of oxygen that was originally contained in the flue gas.

Next the gas is passed into the third bulb (all other bulbs are closed) by raising the bottle and forcing the gas into it. This bulb contains a solution of cuprous chloride which absorbs any carbon monoxide with which it comes into contact. By passing the gas back again into the measuring tube and noting the difference in volume readings before and after the operation, the volume of carbon monoxide that was originally contained in the flue gas can be ascertained.

Since flue gas contains for the most part only oxygen,

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

DO YOU NEED MONEY?
We Specialize in Bonds on Clay Properties.
We Arrange for Their Issuance and Sale.
We have rendered aid to many clay product manufacturers desiring to expand and improve their properties.
Write Us—Perhaps We Can Help You
F. W. MORGAN & CO. 1st National Bank Bldg. CHICAGO, ILL.

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation


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316 S. Dearborn St., - Chicago, Ill.

"SCANDINAVIA"
(Solid Woven Cotton Belt)
TRULY THE BRICKMAN'S BEST BELT
Scandinavia Belting Co.
106-108 Reade Street, New York
Branches: Atlanta, Boston, Buffalo, Chicago, Cleveland, Easton, Pa., Pittsburgh, San Francisco, Los Angeles, Portland, Ore.
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The House of Taylor

IN THE HEART OF THINGS
Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business
157 Pleasant Rooms with Private Bath
$2.50 Per Day
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day
Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate
400 Baths
600 Rooms

ABSOLUTELY FIREPROOF
HOTEL CHELSEA
West Twenty-third Street at Seventh Avenue, New York City.
500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
Room with private bath, $2.00.
Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
To Reach Hotel Chelsea.
From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

carbon dioxide, carbon monoxide, and nitrogen, the last reading or the remaining gas is the volume of nitrogen contained in the sample. Thus a complete analysis may be made in but a very few moments.

⁂

Install a Steam Trap on Your Dryer

To cut down the back pressure in their steam dryer pipes the St. Marys (Pa.) Fire Brick Co. has installed a steam trap. Thus better temperatures are maintained thruout the entire length of the dryer and no trouble is now experienced from having the heat all at one end.

There are also other advantages to be gained by the installation of a steam trap such as the returning of hot water to the boiler which means a saving in the amount of heat required to re-evaporate this water, and by re-using the condensed steam less trouble due to boiler scaling is met with.

⁂

Salt Glazing in Moist Weather

During the spring of the year when the weather is quite damp there is frequently a great amount of moisture taken up by the salt used in salt glazing. When a kiln of ware is to be salt-glazed and this damp salt thrown on the fires there is very likely to be an affect on both the fire and the ware. The fires sometimes become deadened, and since a good fire is essential during this period, this affect may become serious. Another point which may make itself apparent is that the moisture volatilizing along with the salt may prevent a good adherence of the glaze upon the ware.

⁂

Selecting a Steam Engine

In selecting a steam engine for a brick plant there are several factors that should be given due consideration. In the first place the decided economy of the Corliss engine over the ordinary slide-valve type should be realized. The Corliss engine is particularly economical on a brick plant load because that load is a variable one and this type of engine automatically adjusts itself to this variation in load. In regard to the location of the engine, it should be placed as close to the boilers as possible, for by so doing the labor of one man can often be eliminated. There are several plants of as large a capaicty as forty to fifty thousand brick per day where one man fires the boiler and runs the engine.

⁂

Thawing Out Water Pipes

Many winter fires are caused by ill-advised attempts to thaw water pipes. A burning match, torch or open flame of any description should never be employed for this purpose. To wrap the pipes with oil-soaked rags and set them on fire is an extremely dangerous practice.

Pipes are almost invariably adjacent to walls or partitions where there is an ascending current of air to feed and spread a flame. Even if the flame does not start a fire its sudden local heat may cause the pipe to break and flood the premises with water. A good method to follow when pipes are frozen is to wrap the frozen section of the pipe with cotton cloth and pour hot water upon it until the ice in the pipe gives way. Rags placed on the floor at the base of or under the pipe will absorb the waste water.

Protection Against Fire

A good many of our readers have no doubt noticed quite a number of items in our news columns telling of fires which have occurred in clay plants during the past few months which, in many instances, caused the complete destruction of the plant. The fire risks about a clay plant are very great as we all know, hence we should at least do either one of two things: We should either build a fireproof plant or carry sufficient fire insurance. In reality there should be no alternative and every clay plant should be built of fireproof material, if for no other reason than to be consistent with the arguments which play a large part in the sale of our material. However, there are a lot of plants which have not been constructed fireproof and therefore, the subject of insurance must be given considerable attention.

Plant appraisals, too, are intimately allied with insurance and serve to prevent the insured from receiving an unfair premium. In this connection it is well to mention the experience of one party who for twenty-one years had striven to build up an efficient plant when one evening he heard the whistle of his plant blow at an unusual hour. He hustled down to the plant and arrived in time to see his plant in flames—flames which in two hours had destroyed everything but the office.

When the adjusters came to look over the plant they gave the owner the impression that he was going to receive but very little from his insurance, notwithstanding that he was fairly well insured. However, when the owner produced a set of plans of his works and an inventory made by an appraisal company which showed the plant to be worth about twice the amount of the insurance, the insurance men quickly changed their front and signed up the papers immediately.

There are a number of companies who make complete plans of and an appraisal of plants. These plans show the location of each machine and line shaft in the plant. Then by having an inventory made the total value of the plant is easily ascertained. This has proved to be of great value to at least one manufacturer—and in all probability points out an object lesson to you.

⁂

Columbus Building Show Opens

The Columbus Real Estate and Building Show opened Wednesday noon, January 23, for eleven days. The show was originally scheduled to start Monday, January 21, but owing to the fuelless regulations of Fuel Administrator Garfield, it was postponed for two days.

The program for the opening consisted of addresses by Governor Cox, of Ohio, Mayor Karb, of Columbus, and officials of the building show. Special days were arranged as follows: Thursday, January 24, Builders' Exchanges and Real Estate Day, also Ohio Builders' Supply Day; January 25, Ohio Association of Retail Lumber Dealers; January 26, Children's Day; January 29, Woman's Day; January 30, Athletic Club Day; January 31, Chamber of Commerce Day; February 1, All Ohio Day, and February 2, closing ceremonies.

Brick and clay products exhibits were placed with lumber in one of the large buildings on the Ohio State Fair Grounds where the show was held. Quite a few manufacturers of face brick and terra cotta have exhibits which are attracting considerable attention.

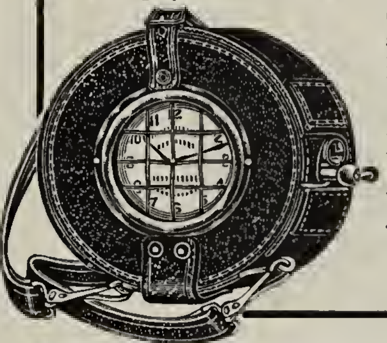
Coal and labor scarce.
Demand for greater production.
Machines trying to do their bit.
Handicapped by breaking Belts.
"Slacker" methods of belt joining.
Don't persist in "getting along somehow."
Efficient service must be considered.
It's your duty to ask about

CRESCENT
BELT FASTENERS

Ask us, your supply dealer
or the man who uses them!

CRESCENT BELT FASTENER COMPANY
381 Fourth Ave., New York, N. Y.

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.



Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

Padded Gears
If You Use
Rino Gear Shield
the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,

The Ohio Filler and Shield Co.
Columbus - - - Ohio

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission
Machinery Equipments

Catalogs upon Request

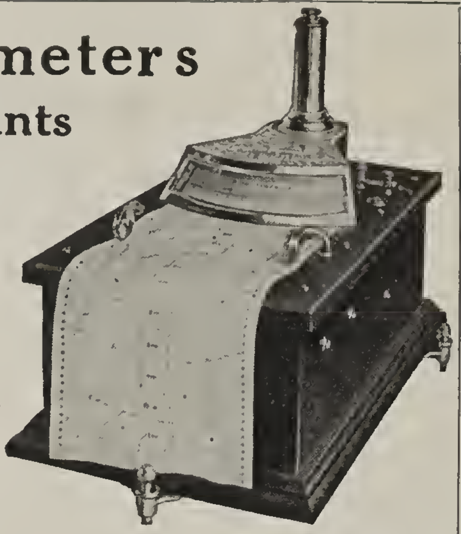
Hill Friction Clutch Pulley
Smith Type
(Patented)

The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street

Price Pyrometers
on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO



The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

J. P. Wynn, prominent fire brick manufacturer at Beach Creek, Pa., died on January 8, at the age of 68 years.

Charles W. Focht, brick manufacturer of Birmingham, Ala., formerly of Reading, Pa., died on January 8, at Birmingham.

Phillips E. Williams, for many years engaged in the brick manufacturing industry at Boston, Mass., died at his home in that city on January 17.

E. M. Prescott, of the Fresno (Cal.) Brick & Tile Co., presented the high school of that city with a compressed air tank which will be used in the automobile classes.

G. L. Rodgers has severed his connection with the American Refractories Co., Lima, Ohio, and is now ceramic engineer for the Lake Superior Corporation, of Sault Ste. Marie, Canada.

Edward Regan, for many years the only clay pipe maker in or near Syracuse, N. Y., is dead. Mr. Regan established a sewer pipe plant here in 1877 and carried on the industry for more than thirty years, employing about half a hundred men.

California

The Old Carey brick making plant near Richmond, Cal., is now being overhauled and will be put in operation before the end of January, according to present plans.

J. T. Roberts, of the Stockton (Cal.) Fire & Enamel Brick Co., finds that all the fire brick plants in this section report a good business, and that most of them have enough orders in sight to keep them busy for the entire year.

W. H. Edwards, manager of the Brick Manufacturers' Association, Crossley Building, San Francisco, has been awarded the contract to supply the brick for a $400,000 structure which is to be erected for the National Paper Products Co., at Stockton, Cal.

The Stockton (Cal.) Fire & Enamel Brick Co. with offices in San Francisco, has just succeeded in winning its point in an effort to prevent a raise in freight rates on its output shipped out of Stockton over the Southern Pacific Railroad. The maintenance of the old rate means a saving of from $7 per car down.

The interest in California's possibilities as a manufacturing center for magnesite brick continues, and the prospects are that a number of magnesite brick plants will be put in before the year is out. The demand here continues comparatively limited, but the raw material is present in abundance, and the demand in the East seems to be practically unlimited.

Manager George Sutton, of the Vallejo (Cal.) Brick & Tile Co., now has a gang of men at work overhauling the machinery of the plant with the idea of putting it in first class shape. Mr. Sutton reports that the company has already on hand a number of big contracts to be filled this year, and expects to be working a force of a hundred or more men when the plant gets under way in the spring.

The Parker Brick Co., of Santa Barbara, Cal., has received a permit from the California State Commissioner of Corporations to issue two hundred shares of its capital stock in exchange for the properties of two co-partnerships, the Parker Brick Co., and the Contractors' Supply Co., both of which were owned by the incorporators of the Parker Brick Co. By taking over the two firms, the new corporation succeeds to a well-organized business worked up by two going concerns.

The great activity in shipbuilding on the Pacific Coast is now beginning to make itself felt on the demand for fire brick. As the great numbers of steamers being built for the United States Emergency Fleet Corporation near completion this demand tends to reach the old time capacity of the fire brick manufacturers, but it is believed that the Coast output can be increased sufficiently to care for all probable needs. Most of the plants are now doing their share in supplying the need.

San Francisco brick and clay product men are doing a good deal in the way of educational work to show prospective builders that the price of brick, terra cotta and other clay wares is, in comparison with the selling prices of most commodities, lower than it was in the pre-war period. Brick men are missing no chance to put this fact before the public, both thru the press and by word of mouth, and it is believed that this steady work is bearing some fruit, tho the amount of building for private account is still very limited. Nobody is making any predictions as to just what the spring and summer will bring forth in the way of building, but the general feeling is hopeful.

Gladding McBean & Co., with extensive works at Lincoln, Cal., and general offices in the Crocker Building, San Francisco, report that just at present they are doing so little manufacturing at their large brick and terra cotta plant at Lincoln that the works are all but shut down. F. C. Davis, of this company, says that, until building conditions clear up a little thruout the country, his concern will devote itself chiefly to doing publicity work. In his opinion, it is the tendency of brick manufacturers in general to do too little "quality" advertising, to talk and print too little about the superiority of their goods. His company finds that it is not particularly difficult to convince the prospective builder that enamel terra cotta and face brick make a building that will not only look better, but that will also bring in a better return on the investment than a building made of inferior materials. Also, it is comparatively easy to show the prospective builder that the cost of terra cotta for a building is only a small portion of the entire cost and the difference in price between good and bad becomes of minor importance when the difference between the appearance and the income producing quality of the resulting buildings is considered.

ORIGINAL Boss SYSTEM

COMMON SENSE APPLIED TO

Drying and Burning

ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

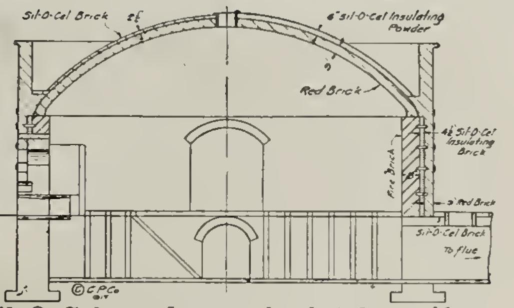
Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH

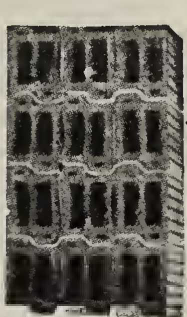
SIL-O-CEL
PREVENTS HEAT PENETRATION

INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway; CHICAGO Monadnock Bldg; PITTSBURGH Oliver Bldg; LOS ANGELES Van Nuys Bldg; SAN FRANCISCO Monadnock Bldg

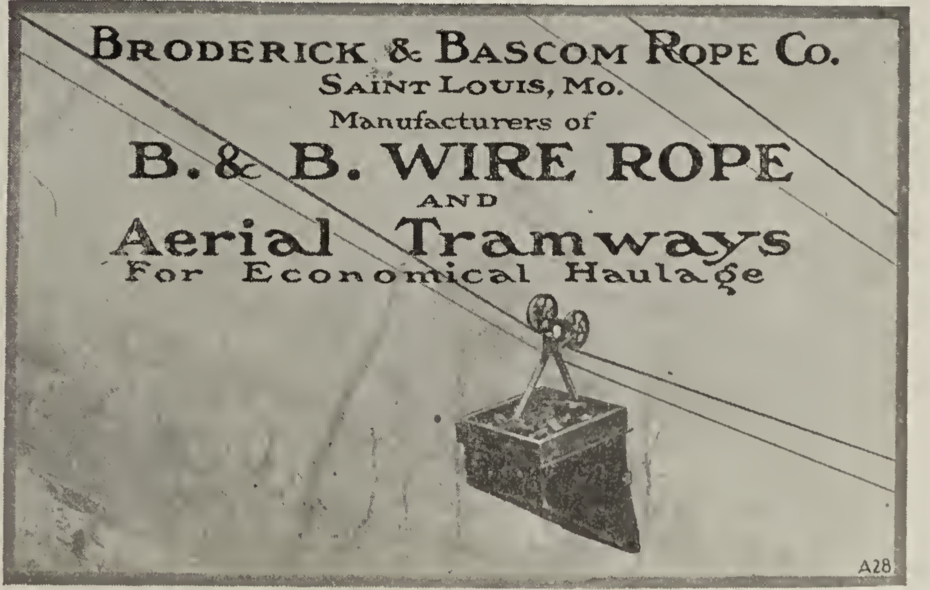


"LOXALL"

A Better Hollow Block

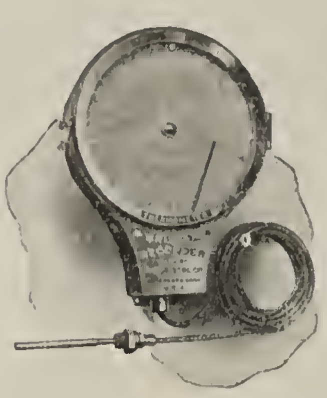
It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address

J. E. EXNER
602 Lincoln St. Coffeyville, Kas.



BRODERICK & BASCOM ROPE CO.
SAINT LOUIS, MO.
Manufacturers of
B. & B. WIRE ROPE
AND
Aerial Tramways
For Economical Haulage

A28



Endurance Under Trying Practical Conditions

One of the features that is best appreciated by the man who pays the bills is the long service given by

TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.

RECORDING INSTRUMENTS

Their rugged simplicity, high quality material and protective casing enables them to stand up for years with uniform accuracy under exposure to heat, dust, smoke, chemical fumes and other hard conditions.

They need just ordinary shop care. There are no delicate parts to get out of adjustment. No experience whatever is necessary to keep them going.

Uniform accuracy has been maintained for years without repairs.

Any engineer or intelligent shop man can erect them.

Bristol's Recording Instruments are being used for recording pressure, temperature, electricity, time, electrical motion, etc. Catalog gives full details.

The Bristol Co. Waterbury, Conn.

Branch Offices:
Boston New York Pittsburgh Chicago San Francisco

But—You Can't Do It!

You can't get the kilns unloaded on time—You can't prevent accumulated demurrage on cars—You can't have satisfied hustling wheelers—

UNLESS

You have a fleet of
INVINCIBLES

Look!

IT
IS
BALANCED

The axle is under the load—NOT at one end of it.

It slides—down the runway—and the hind legs don't rip and tear.

It Rides Its Load

THE TORONTO FOUNDRY AND MACHINE CO.
TORONTO, OHIO

Colorado

At a meeting of the stockholders of the Longmont (Colo.) Brick & Tile Co., held on January 7, the following officers were elected for the ensuing year: A. H. Gunning, president; C. H. Wessels, vice-president; C. A. Gunning, secretary and treasurer. A report of the annual business last year showed the value of the product manufactured to be $42,000. An eight-per-cent. dividend was declared and $2,000 was paid for depreciation while $5,000 was added to the surplus.

One of the new industries which has sprung up in Pueblo, Colo., during the year 1917 is that of the Pueblo Clay Products Co. This company was formed to utilize the clay at the mines of the Turkey Creek Stone, Clay & Gypsum Co., at Stone City. As its products, calcined clay, found a market, the company expanded until its capacity reached 500 tons a month. Enlargements are now being made which will raise this figure to 2,000 tons. The plant at Stone City consists of 67 calcining kilns and large storage bins for receiving clay from the mines. After being calcined it is shipped, for the most part, to the zinc smelters in Kansas and Oklahoma. J. D. Thomas is head of the Pueblo Clay Products Co.

Georgia

The B. Mifflin Hood Brick Co., of Atlanta, Ga., has a contract with the War Department for 2,000 carloads of chemical ware to be used in the construction of government plants at Sheffield, Ala.

Illinois

Twenty-seven brick, tile, pottery and other clay products plants employing 3,241 men, and operating in the Chicago district, were affected by Fuel Administrator Garfield's cessation order.

The Illinois Brick Co., of Chicago, of which William Schlake is president, has just acquired title from the Pullman Land Association to a tract of approximately fourteen acres of land lying along the west shore of Lake Calumet at Kensington Avenue, 631 by 500 feet, and adjoining property for an indicated price of $30,000, or at the rate of approximately $2,150 an acre. Mr. Schlake contracted to purchase this property five years ago and occupied the tract with a brick factory and yard up to about a year ago, when the building was destroyed by fire. Mr. Schlake recently leased about ten acres of the tract to a group of manufacturers, who have taken an option to purchase the ten acres within five years at $10,000 an acre.

Indiana

Trade with the brick and tile manufacturers of southern Indiana towns is at a standstill at the present time and many of the plants are closed down and not much improvement in business is looked for until early next spring. John C. Andres, secretary and treasurer of the Standard Brick Manufacturing Co., at Evansville, reports that two of the company's plants in that city are closed down and in fact have been for several weeks and only one of their plants is running and that on part time The company report a large stock of brick on hand with little demand at this time. Building operations are at a standstill and no picking up is looked for during the months of January or February. "The car shortage is not bothering us at this time," said Mr. Andres, "for the reason that we are shipping out practically no brick. We do not expect much business as a rule at this time of the year and therefore are not disappointed." The cold weather and heavy snows in southern Indiana worked a hardship on many of the brick manufacturers. More than sixty-two inches of snow had fallen in southern Indiana up to January 17, which breaks all records for that section. Brick manufacturers say that when spring comes and the weather moderates that there ought to be a fair amount of business for them. Their trade in 1917 was quite satisfactory in spite of war conditions.

Iowa

The Iowa Tile Co., we are informed, has been incorporated at Des Moines, Iowa, with a capital of $2,000. A. T. Gregg is president of the new company, while R. Reinsberg is secretary.

Kentucky

S. M. Bradley, president of the Johns Run Coal Co., Morehead, Ky., is planning for extensive development on fire clay mines on the tract of the Johns Run Coal Co., at Reedsville.

Michigan

G. T. Cruer, representing the Briggs Co., of Lansing, Mich., has secured an order for 300,000 brick to be used in the construction of the Haskelite factory at Grand Rapids, Mich. The order, calling for expeditious delivery, will be handled thru the Standard Builders' Supply Co.

A newspaper report informs us that the Saginaw (Mich.) Brick Co. has arranged an attractive display of its red, white and buff brick. This company's product is sold almost entirely in the immediate vicinity of Saginaw and the list of manufacturers which have constructed their buildings with this material is a long one.

The annual meeting of the Grande Brick Co., Grand Rapids, Mich., was held during the week of January 12 and the following officers were elected: J. L. Jackson, president; C. W. Garfield, vice-president; H. O. Joseph, secretary and general manager, and E. D. Church, treasurer. The company's production during 1917 was over 8,000,000 brick.

Missouri

Certificate of incorporation has been filed by the Wellsville (Mo.) Fire Brick Co., fixing its capital stock at $100,000. The incorporators of the new concern are: W. J. Gilbert, G. A. Andersen and T. K. Shelby, et al.

Anthony Ittner, St. Louis' oldest brickmaker, is confined to his home suffering from a broken wrist, the result of a fall on an icy walk. He is 80 years old. Mr. Ittner, who is a member of the Belleville Brick & Tile Co., is an ex-president of the National Brick Manufacturers' Association and is the only man who holds the distinction of having been twice elected to that office.

The announcement of government plans to erect three

Tycos
TEMPERATURE INSTRUMENTS
Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.

Tycos Pyrometer
High Resistance Wall Type Indicator.

In selecting the proper equipment for the measurement of high temperatures, progressive manufacturers invariably choose *Tycos* Pyrometers.

May we send you our catalogues which explain these *Tycos* Instruments fully?

Taylor Instrument Companies
ROCHESTER, N. Y. 60

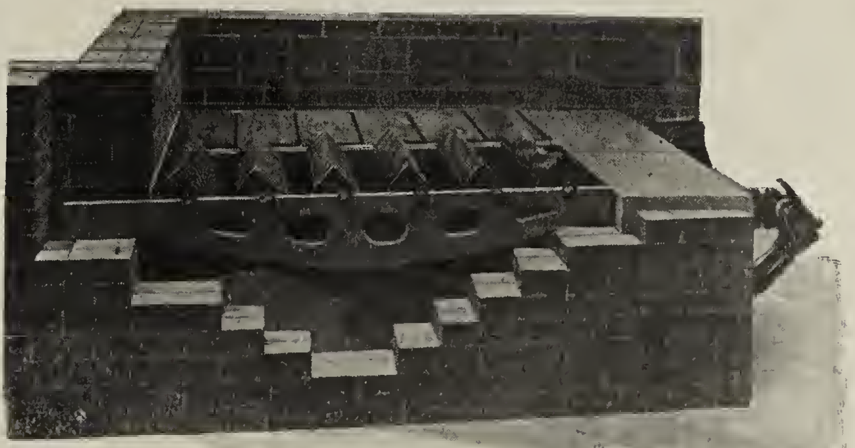
Cyclone Grates

—are actually saving from 10% to 25% of former coal tonnage used.

If you do not investigate—the fault of a continued 10 to 25% loss is on your own shoulders.

We absolutely guarantee 10%, it usually is more. Ask for full explanation and our easy terms.

Cyclone Grate Bar Company
Buffalo, N. Y.



Please Note

"Quality As Usual"

And Quick Action

You know what steel and iron market conditions are like. Judge then the importance *to you* of the following facts:

FACT 1—The extreme high quality of The Standard Brick Drying Equipment before the war is being strictly maintained in spite of present conditions.

FACT 2—We are ready with a large stock of this high-grade material and can make prompt shipment of complete drying equipment.

Let us know your requirements.

The Standard Dry Kiln Co.
1540 McCarty Street
Indianapolis, Indiana

Boost Production by Reducing Error

By eliminating guesswork in your heat control, Thwing Pyrometers provide a sure means of safely increasing output.

These dependable instruments measure and record temperatures on a commercial basis and with laboratory accuracy.

—they reduce spoilage.
—they save fuel by preventing superheat.
—they insure uniformity of product.

Thwing Pyrometers are simple and sturdy in construction, and usable by a man of ordinary intelligence.

By installing Thwing Pyrometers to control your heat treatments, you not only face war conditions squarely but place yourself in position to best meet the exigencies of after the war competition.

Catalogue No. 8

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Thwing Instrument Company
3336 Lancaster Ave., Philadelphia, Pa.
10

large store houses at the arsenal in St. Louis has come as interesting news to the brick manufacturers. While plans and specifications have as yet not been delivered, it is estimated 1,500,000 brick will be used in the buildings. With considerable other construction in contemplation in St. Louis, the trade forsees an active spring. While at the same time it is predicted the opening of the free bridge will bring along building activities not yet forecast.

By the addition of another unit to its plant, the Walsh Fire Clay Products Co., of St. Louis, Mo., will soon be able to increase its output 125 per cent. The new factory is now being constructed and is nearing completion. The Walsh company reports the season an unusually busy one in its line, the plant having all it can do. Shortage of coal and labor and the unusually severe weather, has, however, hampered the work to a considerable extent. Basing its predictions upon present indications, the company is expecting the year to be a very busy one.

A fire that started on the roof of a small building holding fuel oil tanks of the sewer pipe plant of the W. S. Dickey Clay Manufacturing Co., Kansas City, Mo., on the night of January 7, resulted in a loss of 20,000 barrels of fuel oil and the structure containing the oil tanks. The sewer pipe division of the Dickey company is at Guinotte and Monroe Avenues, and in the heart of large switching yards. It is thought that sparks from a passing switch engine started the fire. Walter S. Dickey, president of the company, said the loss would be between $5,000 and $7,000.

New Jersey

The White Elephant Brick Works, of Bordentown, N. J., are burning two kilns this winter, with about 2,000,000 brick laid up. The company states that its principal trouble is in getting cars. And this difficulty is so common all thru New Jersey that few have been able to get their shipments out on time.

The Hackensack (N. J.) Brick Co., of which George M. Brewster is general manager, enjoyed a good business all the season and its motor trucks are now delivering small orders for repair or to complete orders placed some months ago. This company is one of the few that operated to capacity in the Hackensack district last season and it is planning further development for the season to come.

The Raritan Ridge Clay Co., Paterson, N. J., has opened an office at Bohnantown, N. J., not far from where the big ship yards are in process of erection on the meadows at Port Newark. It is essential that someone representing the companies selling material to these yards be constantly within call. Other material men are doing likewise. Speaking of celerity in ship yard work within 86 days from the time the new Port Newark yards were staked out the plant was ready for operation and the first keel was laid.

Dealers are asking $12 for common brick on the job. But navigation is closed in every direction. Raritan Bay is frozen harder than for fifty years. The Hudson is a mass of ice as far down as Poughkeepsie and the ice is more than two feet thick on the Hackensack River. Cold weather since the middle of December has kept the waterways locked solid and lack of cars has prevented rail shipments. Therefore any price is little better than nominal. Considerable warm weather will be required to open the waterways so barges can move.

New York

The Onondaga Vitrified Brick Co., 321 Westcott Street, Warner, N. Y., is planning for the construction of a large new local brick plant, to provide for increased capacity.

In the Hudson common brick market there was hardly a thousand brick sold in the week of January 21, but almost before the market realized that the $9 level was effective all the tickets were taken up and a $10 per thousand wholesale price became effective on January 15, says the "Dow Service Daily Building Reports." Tuesday morning will show only one barge of 400,000 brick on sale in the entire wholesale market of New York. Last year at this time there was approximately 26,000,000 brick in reserve here.

The plant of the Tidewater Paving Brick Co., at Catskill, N. Y., has been purchased by the Wyomissing Brick Co., of Reading, Pa. The plant was built 25 years ago by John F. Harris at an initial cost exceeding $10,000,000 and was conducted under the name of the Catskill Paving Brick Co. The Tidewater Paving Brick Co. purchased the plant five years ago, but discontinued operation in 1915. A. A. Gary, stockholder in the Wyomissing Brick Co., had stock in the Tidewater company. The plant when operated to capacity employs 200 men and receives its shale from Cairo, N. Y., on the Catskill Mountain Railroad.

Ohio

The Nicholson Clay Products Co., of Cambridge, Ohio, has reduced its authorized capital from $100,000 to $50,000.

The brick plant operated by the state of Ohio at Junction City, is still idle because of lack of coal. Repairs on the plant are being made by the seventy convicts from the Ohio penitentiary, which operate the plant. It is planned to run a double shift of men as soon as fuel can be obtained. The plant makes paving brick mostly.

The annual banquet of the Cincinnati (Ohio) Brick Club of the Chamber of Commerce was held at the Hotel Gibson on Friday evening, January 18. There was a large number of the members present, and the evening was most pleasantly spent. The only matter of business that came up for action was the election of a president and secretary. Arthur W. Riggs, of the Builders Brick Co., was chosen for the presidency and H. Serkowich was tendered the secretarial portfolio.

A report of the Federal Reserve Bank of Cleveland, Ohio, made to Washington on business conditions in Reserve District No. 4, states that the clay industry is very quiet and shipments are about one-third of the volume of last year. This report also includes a statement that in the seven principal Ohio cities, and Erie and Pittsburgh, Pa., both in this district, there were 2,721 building permits issued in 1917 as compared with 3,798 in 1916. The valuation of these permits for 1917 amounted to $5,417,625, as compared with $7,638,589 for 1916. The decrease amounted to 29.8 per cent.

I. S. Myers and a number of associates have purchased the property of the Keller Brick Co., Akron, Ohio, consisting of 32 acres of ground and a manufacturing plant.

YOU

have probably observed that we are always using the loud pedal on the "Durability"—the "Long Life" of Union Steel Chains.

Well, you remember what Post said.

Now, listen to this—

CITY OF DOTHAN
Dothan, Ala.
June 10, 1916.

THE UNION CHAIN & MFG. CO.
Seville, Ohio.

Gentlemen:

The chain we bought of you nearly a year ago has never caused us any trouble. **We wore out two other chains in four months before we installed your chain.**

Yours very truly,
A. S. LOWRIE, Supt. Water Works.

Also to this—(kindly note the dates).

CITY OF DOTHAN
Dothan, Ala.
Sept. 18, 1917.

THE UNION CHAIN & MFG. CO.
Seville, Ohio.

Gentlemen:

Please refer to your order No. 316, our order of **August 3, 1915,** and ship us duplicate of the same. (26 feet No. 15 Union Steel Bushing Chain.)

Yours very truly,
R. W. LISENBY, City Clerk.

Some brick manufacturers are wearing out two chains every four months. But the **successful boys** in the game are not. They use a chain whose service is reckoned in **years**—not months—

THEY USE UNION STEEL CHAINS

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

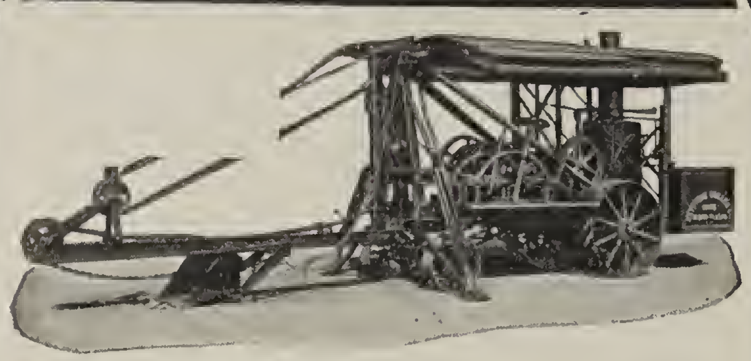
The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

No. 5 Drymore Truck

The loaded pallet is picked up from and deposited upon the ground or floor.

No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.

Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—
FOR LESS
The Drymore System Galion, O.

George White, for ten years superintendennt of the Wadsworth (Ohio) Brick Co., will be general manager of the new company, and the following are its officers: O. A. Alspaugh, president; I. S. Myers, vice-president, and N. J. Long, secretary and treasurer. The other directors will include T. W. Kimber, Akron attorney, M. S. Long, vice-president of the Portage Lumber Co., and F. W. Jones, who heads the waterproof clothing sales department of the Goodrich Co. The new owners are planning extensive improvement to the plant.

Pennsylvania

The Wyomissing Brick Co., of Reading, Pa., on Friday, January 11, purchased the shale brick plant along the creek front in Catskill, N. Y. This plant was constructed twenty-five years ago by John F. Harris at a cost exceeding one million dollars. The ownership of the plant has changed frequently. A. A. Gary, one of the large stockholders of the Wyomissing Brick Co., formerly was interested in the ownership of the Catskill plant.

Texas

The Elgin (Texas) Brick & Tile Co. has been organized and will erect, south of Elgin, one of the largest plants in Texas for the manufacture of pressed brick, rough texture face brick and hollow building tile. The capacity of the plant will be 40,000 pressed brick and 30,000 rough texture brick, and 150 tons of hollow building tile. A producer gas fire continuous kiln will be used in burning the ware. A. J. Kantz will be manager of the plant.

Washington

The Washington Brick, Lime & Sewer Pipe Co., of Spokane, Wash., has secured one of the big contracts of the year in the Spokane district. The company will supply the brick for the $250,000 flour mill to be erected by the Sperry Mill Co., at that place.

Canada

E. A. Duke has sold his brick plant at Lennoxville, P. Q., Canada, to Mr. Arllaim Loomis, of Sherbrook, who will operate it in conjunction with his own. Mr. Duke has moved to Toronto where he has formed a partnership with Mr. Perry and will henceforth engage in the selling of clay machinery.

The annual meeting of the Stevens Brick Co., Portage la Prairie, Man., Canada, will be held at the company's headquarters on February 4.

Dr. Gilmore J. Steele, of the Standard Brick Co., 363 Broadview Avenue, Toronto, has been elected chairman of the Toronto Board of Education.

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In the sanitary branch of the pottery trade, there has been a lack of activity for some months due to the slow building schedules thruout the country, and many of these workers have found employment elsewhere. The art pottery plants in the Zanesville, Ohio, district may be among those to suffer should the non-essential list be verified. It is known that art pottery is classed as a supposed luxury, and the contention is made that dinner-ware is a necessity in every home. Just what the manufacturers will be able to do at Washington to have the pottery industry kept from a berth on the proposed non-essential list cannot be predicted.

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

In the eastern Ohio pottery plants, where gas is used for kiln firing in over 90 per cent. of the plants, very little production has been obtained since before the Christmas holidays. Since January 1, the Ohio Valley pottery manufacturers have lost close to 500 kilns of ware thru inability to fire off kilns in rotation. In some instances, clay shops have been unable to work, as departments ahead of them have been choked with ware. The industry is one where one department depends upon the other. When kilns are full, and not being fired off, this causes idleness in the kiln placing and kiln drawing department. In turn, dippers are made to loaf in the gloss department, and the clay shops are forced into idleness in the bisque department. In the decorating departments, work there depends upon the supply of finished white ware, and when these stocks are exhausted because kilns are not coming thru, those workers are unable to continue.

The freight embargoes have played havoc with shipping and carload after carload of ware, already packed in crates and casks have been held in pottery warehouses awaiting removal to freight stations. In a few instances, where pottery manufacturers use coal for fuel, not so much trouble is being experienced, but even in these cases not enough coal is being received to operate up to normal capacity.

The order of the federal fuel administrator is not going to affect the potteries in eastern Ohio very much, as they have been unable to operate even nominally, in some instances a day or two a week. With warmer weather, there will be a surplus of gas and potteries can operate upon a larger scale, but where coal is used these pottery manufacturers will be unable to fire newly set kilns, and further loss in production will result. Business with both general and art pottery manufacturers is exceedingly active, but manufacturing and shipping problems are ten fold greater than a year ago.

⁂

Inability to secure delivery of raw clay from the South to the domestic potteries in the northern states is very likely to cause considerable additional disturbance in the manufacturing departments. It is estimated just now that between fifty and seventy-five cars of clay are being held up in the vicinity of Cincinnati, Ohio, on the Louisville & Nashville Railroad, it being impossible to have the Pennsylvania Railroad, accept this freight for Ohio delivery. Admission is made, however, that because of the current inactivity of the pottery industry, due to the scarcity of fuel, both coal and gas, this clay is not being missed very much. Once moderating weather exists, and the pottery manufacturers are permitted to light their kilns, then the shortage of southern clays will be keenly felt, and manufacturing will be sorely hampered. There is no evidence at this time that the embargoes on the railroads will be lifted soon, and the announcement that the Pennsylvania Railroad will refuse to accept either

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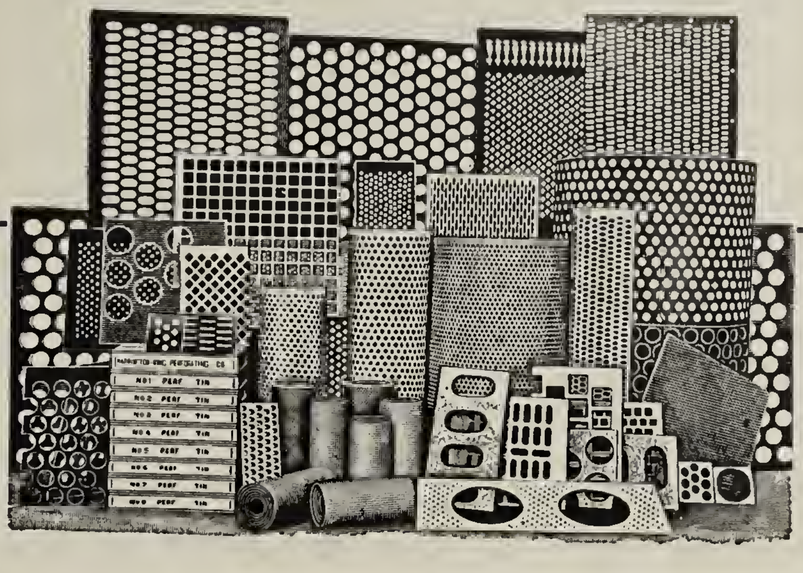

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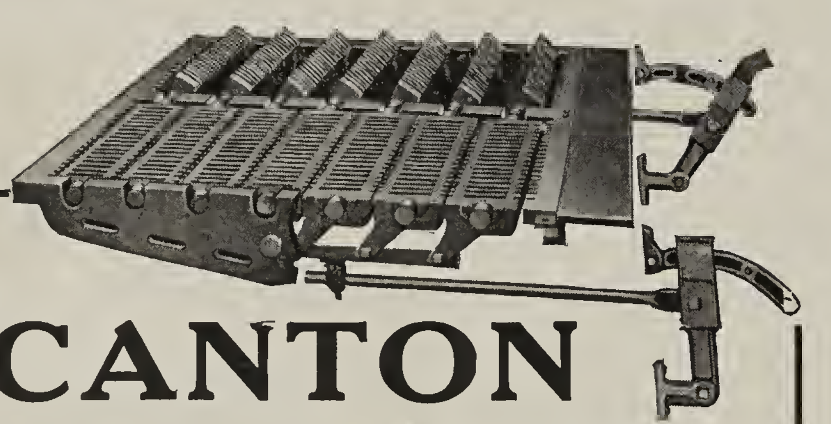

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carlot or less than carlot shipments practically closes the pottery districts from shipping a pound of freight other than by express. Even under this rule, it is said that express carriers will refuse to accept any package weighing over 500 pounds, and some of the larger casks of finished pottery weigh from 700 to 800 pounds.

The new plant of the Bedford China Co., which is being completed at Bedford, Ohio, is using the resources of the Ceramic Department of the United States Bureau of Standards, at Pittsburgh, Pa., to increase the efficiency of its manufacturing plans. The company is the first to avail itself of this department of the government upon such an extensive scale. This concern will use an exclusive American body in its manufacturing department, while other pottery plants make more or less use of imported clays and other raw materials. More modern methods of manufacturing pottery will be used by this company than any other now operating. Two continuous kilns are to be used, which eliminate a host of labor, and in the clay shops other recently invented and improved pottery machinery will be installed.

Fire supposed to have been caused by defective electric wires, raged for three hours at the Nashville (Tenn.) Pottery Co., and caused a loss estimated at about $60,000 to $70,000. The factory was entirely destroyed and it was only by the heroic efforts of the fire fighters that the warehouse containing finished pottery work valued at $50,000 was saved from the flames. The structure occupied by the Nashville Pottery Co. was built about twelve years ago at a cost of about $90,000. About two years ago the plant was operated under the name of the Harley Pottery Co. The present value of the plant, because of improvements made during the past year, is estimated by E. B. Bradley, treasurer and assistant manager, to be about $100,000. It was estimated that $50,000 would be required to rehabilitate the plant.

Sixty pottery plants in the state affected by Fuel Administrator Garfield's order closed without protest, according to Charles F. Goodwin, secretary of the United States Potteries Association. The association comprises all the general ware and china ware pottery plants of the country. Fourteen thousand workers were affected. Thirty of the sixty plants are located in Zanesville, Ohio, and employ 60,000 men. The other pottery producing centers affected are East Liverpool, Crooksville and Roseville. Edward Menge, president of the National Brotherhood of Operative Potters said: "If the order is to relieve coal shortage it is a good one and the pottery workers will not protest."

The Southern Potteries Co., at Erwin, Tenn., seems to be having better success with its operations than some of the northern plants. There has been no scarcity of coal at this pottery, so far this season, it is reported, and the embargoes to southern markets have not been as extensive as in the northern district. The present condition of the country, however, has caused this concern to hold up for the time being its building extension program, which called for the erection of another seven-kiln unit plant. Plans for this new plant have been completed, and will be worked out as soon as conditions change.

The embargo situation is such that even those potteries working on government contracts have been unable to make shipments.

IOWANS HOLD PROFITABLE MEETING

(Continued from Page 236.)

of Fort Dodge; vice-president, G. H. Galvin of Rockford; treasurer, H. R. Straight of Adel; and secretary, Homer F. Staley of Ames. These men were then elected unanimously for those offices.

Before adjournment a resolution was passed protesting against the proposed zone restriction of fuel shipments. A copy of these resolutions will be sent to several of the higher authorities at Washington in the hopes of discouraging the passage of such a ruling.

The roster of the men who attended this conference include:

W. W. Mitchell, Carlisle Brick and Tile Co., Carlisle, Ia.
W. F. Worcester, Ran Appraisal Co., Milwaukee, Wis.
C. W. Irwin, Hydraulic-Press Brick Co.
Chas. Webster, Fuel Administrator of Iowa, Des Moines, Ia.
Frank E. Webner, F. E. Webner Co., Chicago, Ill.
C. A. Baker, Baker Brick Co., Des Moines, Ia.
C. R. Lyon, Dallas County Clay Co., Woodward, Ia.
E. G. Nelson, What Cheer Clay Products Co., What Cheer, Ia.
Claude Smith, Contractor, Mason City, Ia.
O. J. Whittemore, Claude Smith Co., Knoxville, Ia.
S. J. Galvin, Auburn Brick and Tile Co., Auburn, Ia.
L. Haigh. American Clay Machinery Co., Bucyrus, Ohio.
F. C. Lafountain, Reliance Brick Co., Kansas City, Mo.
Roy G. Smith, Bonnot Co., Kansas City, Mo.
Geo. E. Aulmann, Eagle Iron Works, Des Moines, Ia.
H. L. Tramp, Creston, Ia.
E. M. Cook, Mason City, Ia.
J. L. Johnson, Plymouth Clay Products Co., Fort Dodge, Ia.
C. W. Long, Washington, Ia.
J. F. Yegg, Boone Clay Works Co., Boone, Ia.
E. P. Bradshaw, E. P. Bradshaw & Co., Fort Dodge, Ia.
C. J. Newly, Lynnville, Ia.
S. S. Brubakor, H. Brewer & Co., Peru, Ind.
C. C. Long, Columbus Junction, Ia.
H. R. Chamberlain, Dallas County Clay Co., Woodward, Ia.
C. C. Carhart, Sheffield Brick and Tile Co., Sheffield, Ia.
John Gethmann, Hal Gethmann Brick Co., Reinbeck, Ia.
J. A. Dailey, Shale Brick and Tile Co., Chillicothe, Mo.
L. E. Stone, Shackelford Brick Co., Des Moines, Ia.
F. L. Steinhoff, **Brick and Clay Record**, Chicago, Ill.
J. A. Wilson, Lurmore Brick and Tile Co., Lurmore, Ia.
Jno. F. Slater, Des Moines, Ia.
G. H. Galvin, Rockford Brick and Tile Co., Rockford, Ia.
Geo. Kornegor, Rockford Brick and Tile Co., Rockford, Ia.
J. M. Powell, Indiana Drain Tile Co., Brooklyn, Ind.
C. C. McCormick, Des Moines Clay Co., Des Moines, Ia.
B. F. King, Colchester Brick and Tile Co., Colchester, Ill
W. S. Schutts, North Iowa Brick and Tile Co., Mason City, Ia.
C. R. Medson, Algona Brick and Tile Works, Algona, Ia.
H. R. Straight, Adel Clay Products Co., Adel, Ia.
Newton E. Tames, Main Belting Co., Chicago, Ill.
S. E. Cullom, International Clay Machinery Co., Dayton, Ohio.
E. J. Anderle, International Clay Machinery Co., Dayton, Ohio.
H. L. Buxton, Globe Machinery and Supply Co., Des Moines, Ia.
B. E. Sewell, General Western Material Co., Waterloo, Ia.
E. Embmert, Shackelford Brick Co., Des Moines, Ia.
C. A. Rawson, Des Moines Brick and Tile Co., Des Moines, Ia.
J. S. Reeves, Iowa Pipe and Tile Co., Des Moines, Ia.
W. G. McMillan, Keota Brick and Tile Co., Keota. Ia.
J. H. Abel. Ft. Dodge Brick and Tile Co., Ft. Dodge, Ia.
C. J. Weston, Weston Dump Car Co., Ft. Dodge. Ia.
J. W. Lazear, Brown Instrument Co., Chicago, Ill.
H. F. Staley, Iowa State College, Ames, Ia.
C. B. Platt, Permanent Buildings Society, Des Moines, Ia.
J. A. Glandon, A. P. Green Fire Brick Co., Mexico, Mo.
R. M. Burtis, Postville Clay Products Co., Postville, Ia.
O. N. Heldebrant, Garrison Brick and Tile Works, Garrison, Ia.
J. L. Platt, Platt Co., Van Meter, Ia.
W. J. Wetzstein, Deport Brick and Tile Co., Deport, Ia.
Geo. E. Winter, National Clay Works, Mason City, Ia.
G. G. Elton, Richland Tile Co., Richland, Ia.
W. J. Goodwin, Goodwin Tile and Brick Co., Des Moines, Ia
F. J. Kock, Crystal Springs Clay Products Manufacturing Co., Kimballton, Ia.
A. C. Westendorf, Davenport Brick and Tile Co., Buffalo, Ia.
E. Berger, Davenport Brick and Tile Co., Davenport, Ia.
W. H. Brecht, Boone Tile, Brick and Paving Co., Boone, Ia.
S. A. Martin, Centerville Brick Co., Centerville, Ia.
H. C. Pearson, Maxwell Clay Products Co., Maxwell, Ia.
Ned Pearson, Maxwell Clay Products Co., Maxwell, Ia.
P. W. Hean, National Sewer Pipe Co., Webster City, Ia.
T. L. Burley, Capital Clay Co., Des Moines, Ia.
W. T. Goodwin, Kalona Clay Co., Kalona, Ia.
C. L. Burton, Globe Machinery Co., Des Moines, Ia.

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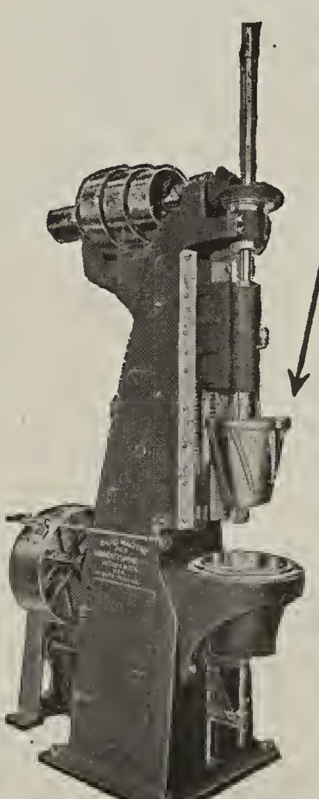

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BOILER FURNACE OPERATION

(Continued from Page 225.)

the volatile matter; in other words, the furnace is intended to make the distillation of the volatile matter continuous and uniform, so that the continuous and uniform supply of air can be adjusted to the proportion giving the most economic combustion.

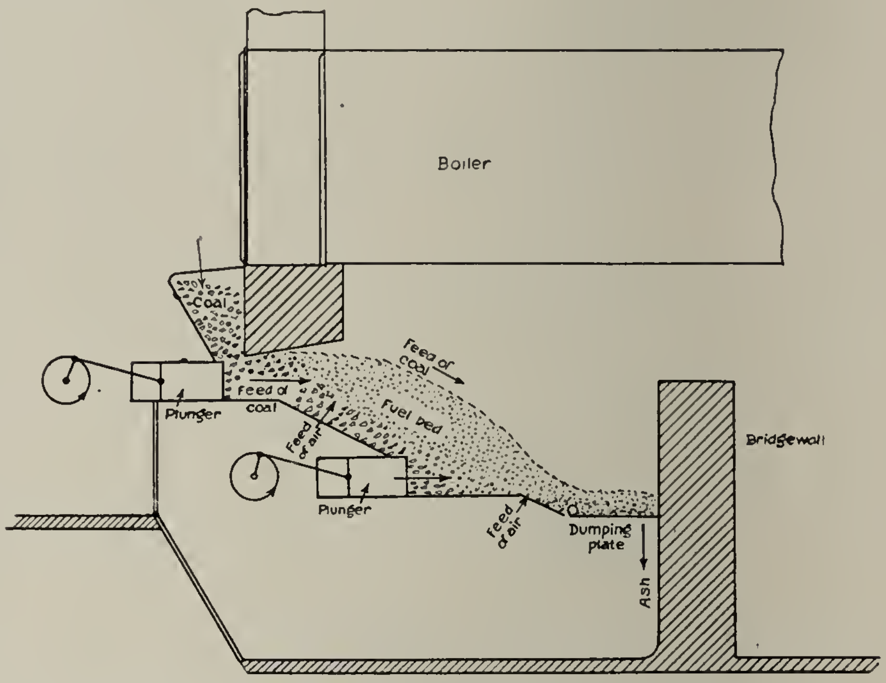


Fig. 7. Showing Another Type of Underfeed Stoker in Which the Retorts Are Inclined Troughs With Two Plungers, One Above the Other, Operated by Cranks.

The furnace has two grates and two fuel beds, one above the other. The upper grate consists of water-cooled pipes with air spaces about two inches wide. The peculiar feature about this grate is that the air flows thru it downward, and hence the name down-draft. The lower grate is of the ordinary construction with an upward flow of air. The fresh coal is fired on the upper grate and is heated slowly until the volatile matter is nearly driven off. The residue, consisting mostly of fixed carbon, drops thru the wide spaces in the grate on to the lower fuel bed, where it burns to ash as in ordinary furnaces. No fresh coal is fired on the lower grate.

The arrows in Fig. 2 indicate the direction of feeding the coal and the air and also the direction in which the fresh coal is heated. On the upper grate the coal and air are moving in the same direction, instead of in the opposite direction, as is the case in the ordinary hand-fired furnace shown in Fig. 1. The heating of the fresh coal takes place in the opposite direction to the movement of the air, so that fresh coal comes in contact only with the cold air and not with the hot gases. The heating of the coal, therefore, occurs only by contact with the hot coal and by radiation across the air spaces between the pieces of coal. Under these conditions the heating is slow; it takes several minutes to heat the coal thru the same temperature range that takes only one minute in the ordinary hand-fired furnace. This slow heating causes a slow and continuous distillation of the volatile matter so that the air supply can be constant and is for that reason easily adjusted to the best proportion.

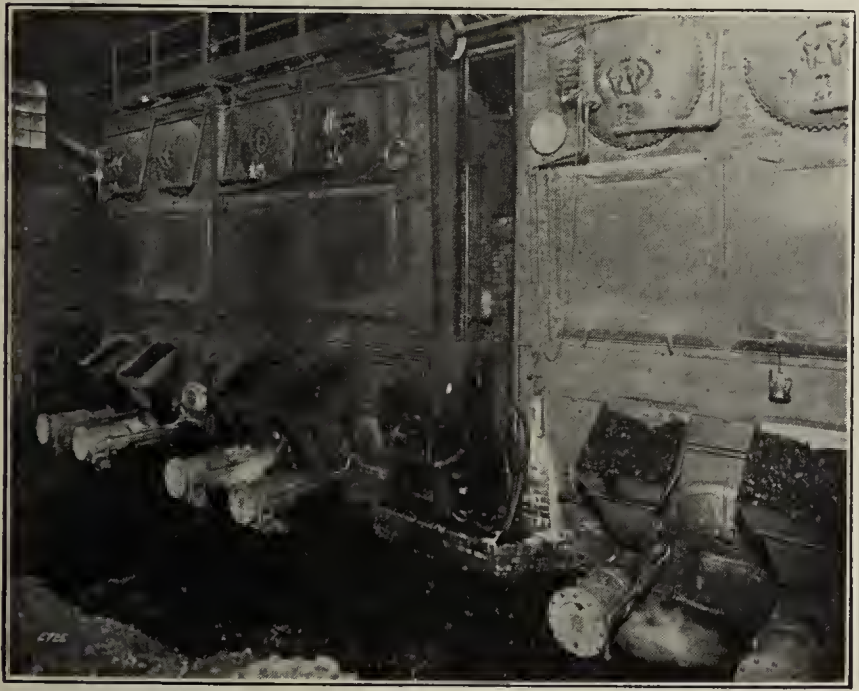
The size and frequency of firings have very little affect on the rate of heating and rate of distillation; therefore, the coal can be fired in large quantities and at long intervals. A constant small supply of additional air is introduced thru the special opening in the doors between the two grates. The firing doors to the upper fuel bed are usually left open because the quantity of air that can enter into the furnace is limited to that amount that can pass thru the upper fuel bed. The ash is either sifted thru the lower grate or is removed by cleaning the fire.

This furnace is designed for high volatile coals containing comparatively small percentages of slack. It is adapted to uniform load and can not be forced. When properly operated it gives good results and is smokeless. It is not used extensively.

MECHANICAL STOKERS

The mechanical stoker furnaces feed the coal, as well as the air, continuously and at a uniform rate. Therefore, it is usually easy to adjust the air supply to the coal feed to obtain the most economical combustion. The air is also introduced into the furnace in such a way that it reaches the distilling volatile matter before any of the oxygen is used; that is, the volatile matter receives air with the full 20 per cent. of oxygen. This feature should be largely credited for the fact that mechanical stoker furnaces burn soft coal without producing smoke.

Fig. 3 shows a type of a side feed stoker in which the coal is pushed from the magazine by a pusher plate, and is moved down the grate by gravity and by the agitation of the grate bars. Air is fed from below at right angles to the direction of the coal feed, as shown by the arrows. The fresh coal is heated by contact with the burning coal in front of it and by radiation from the hot fire brick arch; the hot gases do not come in contact with the fresh coal. The heating proceeds in nearly the opposite direction to that of the feed of coal, and is uniform, making the distillation of the volatile matter also uniform. The distillation takes place just as the coal is pushed from the magazine on to the grate. The distillation zone extends the full depth of the fuel bed and is therefore freely supplied with air having no oxygen burned out of it, so that the volatile matter burns directly without first decomposing into soot (smoke) and light gases.



This View Shows a Boiler Room of a Plant Operated by the Illinois Brick Co. Where Five Mechanical Stokers of the Underfeed Type Are in Use.

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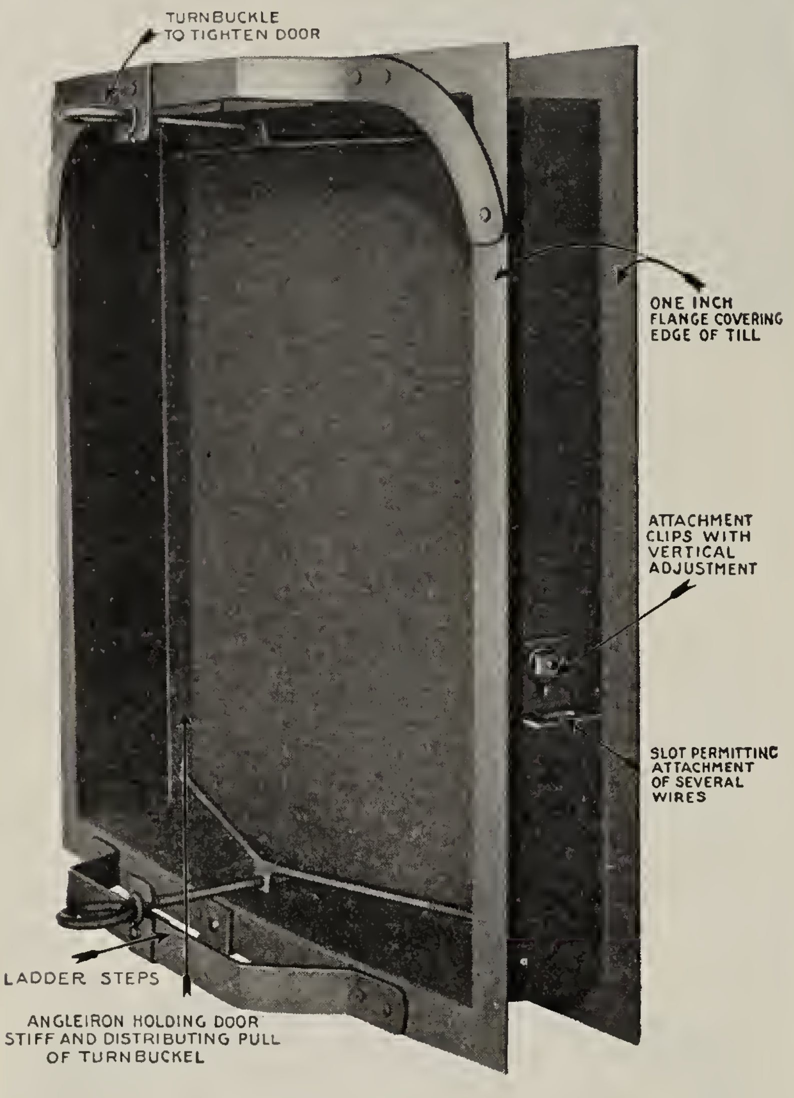
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As the burning coal is moving down the grate the fixed carbon is gradually burned and when the horizontal part of the grate is reached practically only the ash is left. The horizontal part of the grate is made so that the ash can be dumped from time to time. When carefully operated this furnace gives smokeless combustion and economic results. It is best adapted to plants with uniform loads and for free burning coals, that is, coals that do not fuse into a crust when heated.

Caking coals tend to fuse into large pieces of crust on the upper part of the grate, thus preventing uniform feeding and destroying the main advantage of the mechanical stoker. On account of the coal fusing into crust, bare spots are formed on the lower parts of the grate, allowing a large excess of air to enter the furnace, which causes heat losses. In order to prevent these losses, the fireman has to break the crust frequently and level the fire with a fire tool. When doing this he is apt to pull down large quantities of green coal and make black smoke.

INCLINED GRATE STOKER

Fig. 4 shows another design of mechanical stoker feeding coal and air in somewhat similar way as the stoker shown in Fig. 3. The stoker has an inclined grate and a coal magazine on each side of the furnace. In the middle of the furnace, where the two grates come together, is a slowly revolving cylinder with short fingers, uniformly distributed over the surface and passing between similar but stationary fingers at the end of the side grates. This cylinder is intended to grind the clinker and large pieces of ashes into the ashpit. A secondary supply of air is introduced into the furnace thru a set of openings immediately above the discharge of each coal magazine. This air is intended to help in burning the volatile matter which is being distilled from the coal as it enters the furnace. As to adaptability to plants and coals, the statements made of stoker of Fig. 3 apply to a large measure to this stoker furnace.

Fig. 5 shows a chain grate type of furnace in which the feed of coal is more positive because the entire grate moves like a belt in the direction of the feed. The direction of the feed of coal and air and the way in which the heating occurs is relatively the same as in the preceding two stokers. The heating of the fresh coal takes place by contact with the burning coal and by radiation from the arch. The hot gases do not come in contact with the fresh coal. The heating is uniform, thus causing a uniform distillation of the volatile matter, which makes it possible to adjust the air supply to the most economical proportion and keep it there. The zone where the volatile matter is distilled is in front of the coal hopper, just after the coal has entered the furnace and extends the full length of the fuel bed.

The air with its full oxygen supply reaches the volatile matter as it is being distilled and produces complete combustion without the formation of smoke. As the coal is carried towards the bridgewall the combustible is burned off and the ash is dumped into the ashpit as the chain grate turns down around the rear revolving roller of the stoker. Thus there is a continuous and uniform discharge of ashes.

This grate is well adapted to plants having uniform load and to non-caking coals. It is not adapted to caking coals unless special parts and mechanism are added to break the crust or cakes. Such additions make the stoker and its operation more complicated. If caking coals are burned on the ordinary chain grate the caked up coal is carried the full length of the grate without burning completely and dumped with the ash into the ash pit. Thus a large amount of combustible is lost by being included with the ashes.

In operating this grate, careful attention must be given to the length of the fire. If the grate is moving too slow or if the fuel bed is too thin the coal may all burn out long before it reaches the bridgewall so that a large part of the rear of the grate contains nothing but ashes and allows a large excess of air to enter into the furnace. This kind of fire is called a short fire and causes losses from large excess of air. A large excess of air may also enter the furnace along the side walls. If, on the other hand, the grate is run too fast, or if too thick fire is carried, the coal will not be burned completely when the dumping point is reached and too much combustible is dumped with the ashes into the ash-pit. This kind of fire is called a long fire. On a wide grate, part of the fire may be short and other parts long. When such condition occurs the fire must be evened with a fire-tool thru a side door.

The chain grate is extensively used in that part of the United States where coal from the Illinois coal field is available. On the whole, the grate gives satisfactory service as to economy and smokelessness.

In the underfeed type of stoker shown in Fig. 6, both the coal and the air are fed from below in approximately the same direction. Some air is also introduced thru the cleaning doors in front of the furnace. The heating of the coal proceeds from above in the opposite direction of the feed of coal and air. The fresh coal is heated mostly by contact with the hot coal above and against the stream of air. The heating is slow and uniform, causing the volatile matter to be distilled in a steady stream. The distillation also takes place in air having no oxygen burned out of it. Under these conditions the volatile matter burns completely without the formation of soot (smoke).

It is comparatively easy with this stoker to maintain the coal and air supply at the most economical proportion. The coal burns in a heap above a retort extending nearly the full depth of the furnace. The coal is fed up thru retort by means of a plunger operated either directly by a steam cylinder or by a crank and a connecting rod. There may be more than one retort in a furnace. In the type of stoker with horizontal retort and side plates the ash accumulates usually in the form of clinker on the side plates and has to be removed with fire tools thru the front doors. This ash removal is often hard and disagreeable work and is perhaps the main objection to this type of stoker.

In another type of the underfeed stoker outlined in Fig. 7, the retorts are inclined troughs with two plungers, one above the other, operated by cranks. The motion of the plungers makes the burning coal slide slowly down the inclined retort, the coal burning off as it moves down and the ash accumulating on the horizontal part of the grate at the lower end of the inclined retort. This horizontal part of the grate is provided with levers for dumping the ashes. When the ash is fusible the clinker bridges across this dumping grate and is difficult to remove, especially if there is little room on the side of the boiler for handling fire tools. Some designs of this type of stoker are provided with clinker-grinding attachments.

The underfeed stokers are always operated with a forced draft, so that the rate of combustion, and, consequently, the capacity of boiler can be easily controlled. The stokers will handle a large variety of bituminous coals and are especially well adapted to plants where the demand for steam changes rapidly. Within the last few years many underfeed stokers have been installed in industrial plants and seem to be giving good service.

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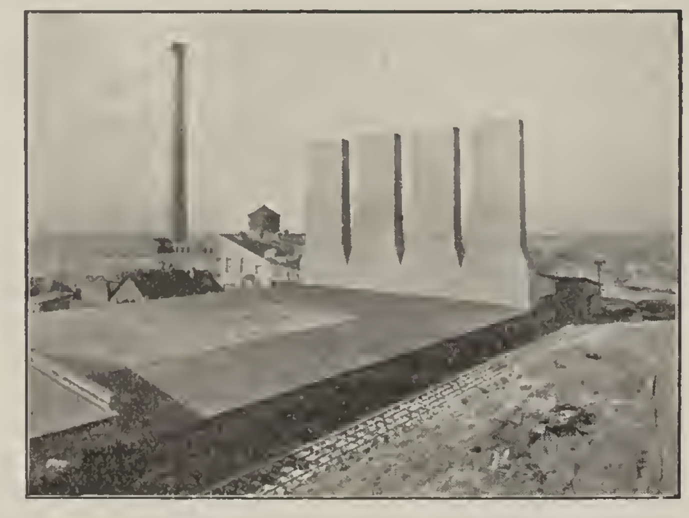

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To stop your fires from smoking.

To stop any loss of fuel due to seeping or dropping through the grates.

To keep an even pressure of steam.

To have no carbon or un-burned material in the ash.

The Solution is—

Install the JONES UNDER-FEED STOKER in your furnace.

For detailed explanation of above, write for our illustrated booklet No. 50. Sent on request.

The Under-Feed Stoker Co. of America

General Offices—Harris Trust Bldg.
Chicago, Illinois

Branch Offices in the Following Cities:

New York, Pittsburgh, Philadelphia, Boston, Buffalo, Cincinnati, Toronto, Minneapolis, Milwaukee, Kansas City, Denver, Detroit, Toledo, Salt Lake City, Charlotte, New Orleans

NORTHWEST TAKES STEPS TOWARD OPEN PRICE

(*Continued from Page* 235.)

this coming year than last year, he said, and wages would be slightly higher.

TALKS ON MINNESOTA CLAYS

"Minnesota Clay Development" was the subject of an informal talk by F. W. Sardeson. The geological formations occuring in the state were carefully gone over and the various clays familiar to most of the manufacturers were pointed out. However, evidence was submitted that there probably were deposits of badly needed clays in the state, particularly good fire clays, which to date had not been uncovered by surface inspection. Mr. Sardeson said that an exhaustive survey was necessary to fully know the resources of Minnesota with regard to clays and that he had laid plans for such a survey, but had been unable to carry them thru owing to a combination of circumstances which prevented his doing so.

At this point A. L. Crocker, of the Minnesota Reclamation League, was called upon to speak and told something of the movement now on foot to utilize the vast resources of the state now laying idle, particularly in the northern section.

ANNUAL BANQUET

An unusually large number sat down to the annual banquet held in the West Hotel, the evening of the 17th. After partaking of a well prepared meal, Miss Frances Works entertained the company with music and recitations. Capt. W. S. Drewry and Lieut. W. A. Grady, of the British Army, told of some of their experiences in France, while every one listened with an attentive and appreciative ear. Judge Harry Johnson spoke in a lighter vein and then the party broke up for the evening.

TRANSPORTATION OF CLAY PRODUCTS

J. R. Ewing, of the Western Weighing and Inspection Bureau, Chicago, was the first speaker on Friday's program, taking as his subject "Transportation of Clay Products." The following points were brought out by Mr. Ewing:

The loading of cars with clay products for shipping is always important, but particularly is it imperative that the greatest care be taken at the present time because of the congested conditions existing on the railroads of the nation, involving more switching and consequently rougher handling, due to the cars being a longer time on the road.

Speaking from experience as foreman of a loading crew at a clay products plant, Mr. Ewing said it was a good investment to lay strips of wood on the floor of a car in which there are projecting bolts or washers which are sure to damage the ware. A gate at the end of the car to act as a bumper is also a wise arrangement, as the ends of the ordinary freight car are not very soft. Bulk heads or braces of one-inch material in the doorway of a car will prevent the load from shifting with consequent damage. In a train of thirty cars there is usually a sufficient amount of slack to equal one car length, and this is the reason why there is so much jarring and jolting, putting a severe strain on shipments that are not properly packed. A bulk head built of two by fours should be used for twenty-four-inch sewer pipe.

LOADING HOLLOW TILE

In the loading of hollow tile, lath gates should be placed in the ends of every car. These only cost about twenty cents, but are excellent insurance against breakage. Also, joints should be broken in the loading of tile as this will reduce the movement of the material to a minimum and thereby cut down possible damage.

Sewer pipe fittings should always be packed in straw. It is folly to place these on top of the load after the car has been filled.

In line with the campaign being conducted by the government and the railroads in an effort to get shippers to increase the loading of cars to capacity plus ten per cent., one drain tile company was cited as having increased the loading of its cars fifteen per cent. in weight during October and November, 1917, as compared with the same months during the previous year, with a decrease to 4.9 per cent. in breakage. This was possible by more careful packing. This concern used wire-bound lath gates and center pieces on pipe and tile up to eight inches, with stronger materials from that size to twenty-four inches.

Seeing cars at destination after having superintended the loading is a great education in packing. Cars that have been thought to be damage-proof are found to have several weak points after delivery, resulting in broken ware.

Careful packing is an excellent investment, since it eliminates many complaints, the necessity for filing claims with the railroads, which have to go thru a lot of red tape, and makes for more satisfied customers. Circular No. 110 issued by the Western Weighing and Inspection Bureau, 1822 Transportation Building, Chicago, describing the loading and packing of clay products may be had for the asking.

In the absence of C. B. Platt, secretary of the Permanent Buildings Society who was in Washington attending a meeting called by Dr. Garfield, United States fuel administrator, the secretary read his paper entitled "Organization of the Business of an Industry." Mr. Platt's paper appears on another page of this issue.

MANUFACTURER MUST SELL SELF

"Brick Markets," by F. B. Martin, of the Twin City Brick Co., Minneapolis, followed. Mr. Martin talked from the standpoint of the brick manufacturer in the small town. He jabbed his readers somewhat by stating that a number of clay products manufacturers had confessed to him that they did not even live in a brick house. This being the case, if the clay products manufacturer ever expects to sell his ware, he must first sell himself on his proposition.

While there are a number of methods of selling brick, one upon which he placed a great deal of value, was the matter of identification with one's material.

"You see it's like this. My initials are F. B. and consequently I have become known as Face Brick Martin.

"Did you ever build a house? If you have you know that it is one of the best lessons you could possibly learn. You are in the business of selling a building material. If you have had some practical experience with its use it will help you considerably in giving advice and counsel to customers.

"Ordered Today — Shipped Today! — that's what we call SERVICE," says 'On-the-Job' GANDY.

GETTING *GANDY* Belts where-you-want-'em-when-you-want-'em is just as much a part of *GANDY* business as the making of its famous *original stitched cotton duck product.*

The same day your order comes, *that* day it is filled from the big ready-for-shipment stock of well seasoned *GANDY* power and conveyor belts.

Regular and odd size *GANDY* Belts may be obtained from the principal jobbing points throughout the country as well as from the home plant.

If in doubt as to width or ply required, our Engineering Department stands ready to advise you.

Caution—Get your belting orders in at once. Uncle Sam has first call on the railroads, and shipments are likely to be delayed in spite of our quick order-filling service.

To facilitate ordering—write for Stock and Odd Size List.

The Gandy Belting Company
732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

SAY I SAW IT IN BRICK AND CLAY RECORD

The "B-G"
Portable Belt Conveyor
Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

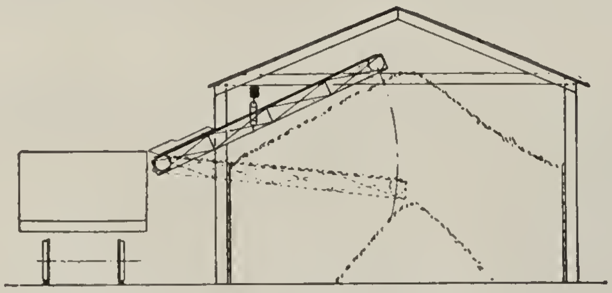
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited. Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

"However, I am not urging that you design your house. If you can design a house you don't belong in the brick business. That is the architect's business. I have seen more frightful looking brick houses designed by clay products manufacturers than have ever been built from canned plans."

TELLS OF OPEN PRICE PLAN

At this point Mr. Martin deviated somewhat to explain the open price plan under which the Northwest Face Brick Association is operating. In connection with C. B. Platt's paper, Mr. Martin urged that the Northwestern Clay Association join hands with the Iowa manufacturers in promoting the interests of the Permanent Buildings Society.

Henry Deutsch was to have talked on "War Loans," but since he was not able to be present, Clark R. Fletcher substituted admirably.

J. A. Glandon, vice-president of the A. P. Green Fire Brick Co., Mexico, Mo., then read a paper on "Requirements of Fire Brick in Furnaces and Kilns."

After lunch the secretary read a paper prepared by E. A. Hults, formerly secretary-manager of the North Iowa Brick and Tile Co., Mason City, Iowa, on "Why Clay Plants Lose Money." This paper had previously been read before the Iowa Clay Products Manufacturers Association at its annual meeting held January 16 to 18, 1917 at the Iowa State College, Ames, and was published in the March 27, 1917, issue of *Brick and Clay Record.*

READS PAPER ON OPEN PRICE ASSOCIATIONS

C. A. Gunn, secretary of the Northwest Face Brick Association, followed with a paper which was to have been read before the annual meeting of the Face Brick Dealers' Association of America at French Lick, Ind., last month. Mr. Gunn's paper appears on page 226 of this issue.

The report of the secretary-treasurer, R. H. Smith, showed that the balance on hand was $44.49 as compared with $34.20 last year. In view of the narrow margin of funds upon which the association has been working for some years past, it was voted to increase the dues from three to five dollars per annum.

The report of the auditing committee, consisting of J. R. Farnam, C. K. Willard, A. A. Yegge and W. Reimer was heard. The committee reported that it found the books of the treasurer to be correct and the amount on hand to be as stated in his report.

R. H. SMITH ELECTED PRESIDENT

The nominating committee, consisting of E. H. Cobb, Henry Hess, J. L. Voelker, Fred Passe and M. C. Madsen, recommended the following candidates for office: R. H. Smith, president; C. K. Willard, vice-president, and H. W. Linder, secretary-treasurer. The directors recommended were: S. G. Johnson, A. C. Ochs, J. L. Voelker, J. J. Hess and M. C. Madsen. A motion was passed that these officers as well as the directors be elected by acclamation.

The resolutions committee consisting of G. A. Welsh, W. A. Ochs, C. S. Nixon and R. P. Morton, reported substantially as follows:

Whereas, the date of the annual meeting in January brings us in conflict with other organizations, and brings the meeting at a time when some of our members wish to be away for the winter, therefore, be it resolved that we recommend to the association that a meeting date for some time in December or earlier be considered.

Whereas, complete records of production would be a great aid to the manufacturers of common brick, we recommend that the association name a committee whose duty it shall be to collect data of stocks on hand, month by month in the yards of manufacturers, the figures of each to be kept secret and the totals only to be furnished members, as an aid in their marketing and selling.

Whereas, complete details of cost of manufacture and selling are greatly needed we recommend that a committee be named to develop a showing upon this line, the same to be presented at the next annual meeting.

OPEN PRICE COMMITTEE APPOINTED

Everyone who attended the tenth annual convention of the Northwestern Clay Association felt that they got their money's worth. The sessions were productive of untold benefit to all. A most significant step was taken in the closing minutes of the convention when a motion was passed authorizing the president to appoint a committee to look into the possibilities of working out an open price plan in connection with the activities of the association. Needless to say if it were found feasible to adopt some such plan, it would work great benefit to every member of the association.

Those in attendance were:

B. F. Pay, Fowler and Pay, Mankato, Minn.
J. A. Glandon, A. P. Green Fire Brick Co., Mexico, Mo.
R. G. Smith, Bonnot Co., Kansas City, Mo.
W. T. Madsen, Hutchinson Brick and Tile Co., Hutchinson, Minn.
M. C. Madsen, Hutchinson Brick and Tile Co., Hutchinson, Minn.
W. Reimer, Zumbrota Clay Manufacturing Co., Zumbrota, Minn.
F. W. Sardeson, Minneapolis, Minn.
F. J. Passe, Preston Brick Co., Preston, Minn.
J. J. Hess, Henry Hess and Son, St. Cloud, Minn.
A. A. Yegge, West Concord Brick and Tile Co., West Concord, Minn.
H. W. Ahrens, Okabena Brick and Tile Co., Okabena, Minn.
R. A. Becker, Okabena Brick and Tile Co., Okabena, Minn.
M. F. Rusfeldt, Wrenshall Brick Co., Wrenshall, Minn.
S. G. Johnson, Minneapolis, Minn.
E. G. Zorn, **Brick and Clay Record**, Chicago, Ill.
F. B. Martin, Twin City Brick Co., Minneapolis, Minn.
H. W. Linder, Colburn Brick and Tile Co., Minneapolis, Minn.
E. N. Rosengren, Colburn Brick and Tile Co., Minneapolis, Minn.
Henry Robel, Jr., contractor, Mankato, Minn.
J. J. Mechler, Hydraulic-Press Brick Co., Minneapolis, Minn.
C. H. Snyder, Hydraulic-Press Brick Co., Minneapolis, Minn.
Fred Hale, Minneapolis, Minn.
Frank R. Cooke, Improvement Bulletin, Minneapolis, Minn.
Geo. Krogschnabel, Fertile Brick and Tile Co., Fertile, Minn.
Norman L. Meir, LaCrosse Building Supply Co., LaCrosse, Wis.
Clarende S. Nixon, Paine & Nixon Co., Duluth, Minn.
G. A. Welsh, Dodge Reports, Minneapolis, Minn.
J. R. Ewing, Western Weighing and Inspection Bureau, Chicago, Ill.
Rufus P. Morton, Princeton, Minn.
C. K. Willard, Heron Lake Brick and Tile Co., Heron Lake, Minn.
Jacob Voelker, Voelker & Groff, Winona, Minn.
W. A. Ochs, A. C. Ochs Brick and Tile Co., Springfield, Minn.
H. A. Sedergren, Minnesota Clay Works, Inc., Minneapolis, Minn.
E. H. Cobb, Hydraulic-Press Brick Co., Minneapolis, Minn.
H. A. Johnson, Municipal Judge, Mankato, Minn.
G. H. Lellman, Bricklayers and Masons Union, Minneapolis, Minn.
R. H. Smith, Minneapolis Fire Brick Co., Minneapolis, Minn.
Geo. Winter, National Clay Works, Mason City, Iowa.
A. Schroeder, Shakopee Brick and Lime Co., Shakopee, Minn.
C. J. Swanson, N. W. Fireproofing Co., Minneapolis, Minn.
G. Leuty, Hebron Fire and Pressed Brick Co., Hebron, N. D.

The Buckeye Clay Digger

PERFECTLY MIXED CLAY

means better formed ware, less loss in drying and safer burning. Almost every known method of producing a perfect mix costs an excessive amount, except when you use

THE BUCKEYE DIGGER

It mixes when it digs, and does it thoroly. In addition the cost is remarkably low; it is simple to operate; the capacity is high and only one or two men are required. It is the best excavator buy on the market. Address

The Buckeye Traction Ditcher Company
FINDLAY - - - - OHIO

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

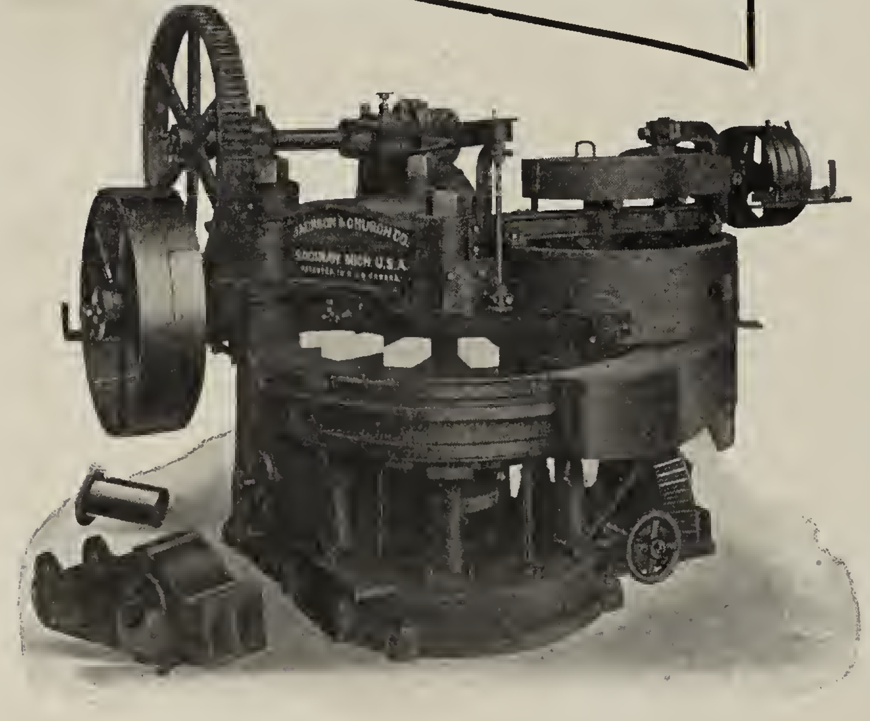
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

The Under-Feed Principle

Combustion engineers are agreed on the advantages of the under-feed system of burning bituminous coal. Twenty-eight years ago this system had but one champion, Evan William Jones, the inventor of the Jones Under-Feed Stoker, but today it numbers its friends by the thousands.

Under-feed burning assures proper combustion of fuel, stack free from smoke and the economical burning of any grade of soft coal; coking, non-coking, high or low ash, high or low volatile.

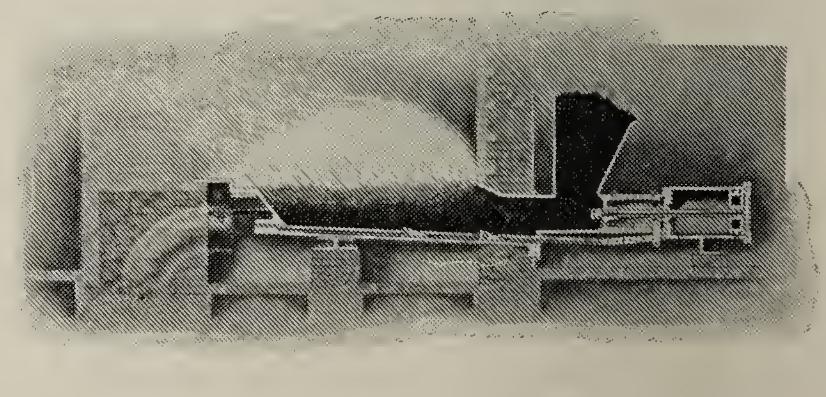
The green or fresh fuel is supplied to hopper, either by fireman or overhead coal feed system, and is delivered to the retort by the ram. As the green coal is fed into the retort it comes in contact with the heat from the fire in the upper part of the retort and this heat causes the hydro-carbons in the fuel to pass up thru the fire, where, coming in contact with the air at high temperature, they form a combustible mixture and are consumed.

By the time the green coal reaches the incandescent fuel bed at the top of retort, it is in the form of coke and is burned by the aid of forced draft supplied thru the tuyere openings.

For a good many years the Under-Feed Stoker Co., of America have been installing the Jones Under-Feed Stoker in clay plants, with the result that today a remarkable list of leaders in the clay industry are using Jones Stokers.

They are not being used exclusively under the boilers, but have been adopted for use on the auxiliary furnaces on the dryers. One of the latest of these illustrations being on the auxiliary dryer at the Streator Clay Manufacturing Co., Streator, Ill.

Successful in every class of installation, nevertheless the preponderance of successes remains with the power boiler installations, and a splendid record of fuel saving is available.



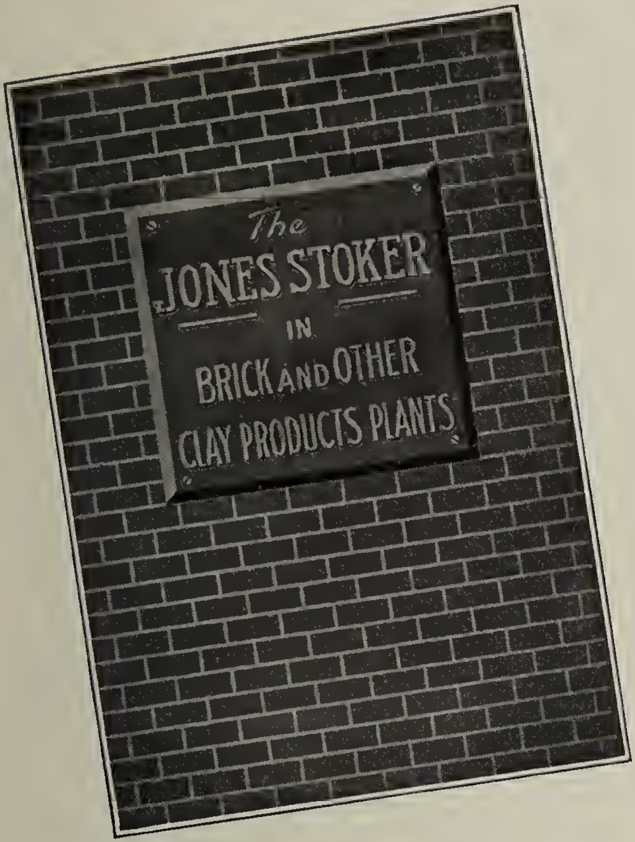
Longitudinal Section—Thru Furnace and Retort

The above cut shows section through retort, hopper, ram, piston and cylinder. Also shows air duct, blast gate, pusher rod and blocks. Coal is fed to hopper, and steam admitted behind piston forces coal into retort, where, coming in contact with the heat above retort, the volatile gases are driven off and consumed. This assures proper combustion and smoke abatement. When coal reaches top of retort or incandescent zone, combustion is completed by aid of forced draft.

A new catalog just issued by the company, deals exclusively with Jones Stoker installations on clay plant.

It contains many photographs and descriptions of actual installations for all classes of work.

"Save Fuel" is a mandate, no longer a request; and with this stoker, this necessity can be complied with on both the large and the small plants.



Facsimile of The Jones Stoker Catalog

Of course, it must not be overlooked that other advantages are inherently a part of the stoker. Briefly the fuel is fed into the furnace at a uniform rate which is automatically controlled; the draft is proportioned correctly, and the steam pressure is kept absolutely uniform. The stoker is smokeless and no fuel is lost; all is consumed.

This catalog shown in an accompanying illustration, will be sent to responsible firms or individuals upon request to the company at Chicago.

* * *

From Plymouth to Youngstown by Truck

When Miller Bros., of Youngstown, Ohio, wanted their Plymouth locomotive, they got it—not by rail, for the railroads could not get it to them, but by motor truck across Ohio on brick roads.

The locomotive was needed, but it was found impossible to get satisfactory delivery by rail, so the big truck was sent "across lots," over six counties, a distance of about 100 miles, and the truck brought home the locomotive.

The Motor Truck to the Rescue

If
The Belt Runs
Over Wooden Pulleys
—and It Slips—

the pulley face is ground off—down to the nails, the belt is worn—worn and gashed and nicked, the power is delivered in jerks when the belts alternately slip and stick. . . .

Then the accident. . . .

The pulley explodes, the belt wraps around the shafts and the immediate vicinity is wrecked.

That's the worst that can happen.

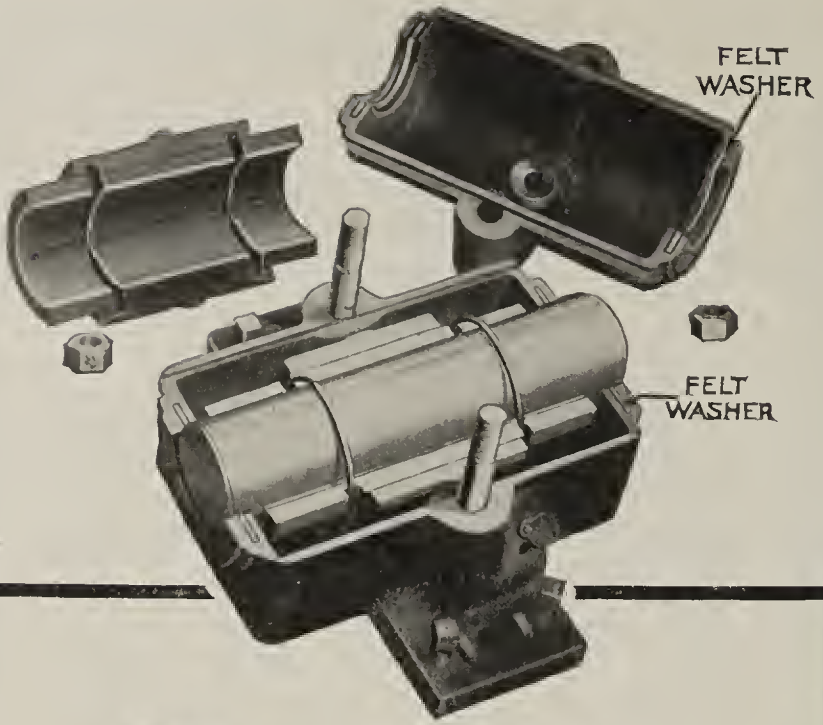
The least is bad enough, for worn out belts and pulleys cost money to buy and to replace, the time and labor of repair is to be measured only by cash, the shut down occasioned by accident or repair is measured only in cash, in value of ware not produced, but for which you paid.

There is a minimum of slip when you use

Cork Insert Pulleys

in fact—a—maximum minimum of slip, and you save . . . . power and equipment and produce ware with regularity.

The Cork Insert Company
168 Federal Street
Boston Massachusetts



CLARAGE
KALAMAZOO
MULTIBLADE FANS
are Superior Fans, because of the Clarage Special Bearing

This bearing is entirely enclosed and self-oiling. The Dust and Grit cannot enter and destroy the inner sleeves of the bearing because of the felt washers (see above).

For genuine, all around service, day in and day out, we recommend CLARAGE MULTIBLADE FANS, for we have perfected the weak point in the ordinary fan—the bearings.

CLARAGE FAN COMPANY.
KALAMAZOO—MICHIGAN—U. S. A.

Multiblade Fans

All of which is a wonderful commentary on motor trucks, on brick roads, and on that Plymouth gasoline locomotive.

* * *

The Watt Calendar

You may secure from the Watt Mining Car Wheel Company, of Barnesville, Ohio, a fine large calendar for your office or factory, by asking for it.

A glance at the reproduction shown here, shows that it can be easily read because of its legibility and sufficient size.

This interesting calender is of extra value to clay plants due to the fact that each of the twelve sheets illustrates a variety of cars manufactured by the Watt Company, for use in every clay plant and allied factory.

The cars illustrated are those that are in successful use in hauling clay, slate, stone, sand, etc. under all sorts of conditions, such as different dumping arrangements, of side, end or bottom.

Did You Receive Your Calendar?

Every type of car known to be of value is made by the Watt Company in a factory that is the largest in the world devoted exclusively to the manufacture of cars. Specializing in cars has produced a product that is justly famed for sturdiness.

* * *

A Bulletin of Bargains

Listing sixty-four pages of bargains in industrial equipment, the new Zelnicker bulletin No. 230 is ready for distribution. In new and used machinery a multitude of bargains are listed, including rails, ties, locomotives, steam shovels, etc. Sent by Zelnicker, in St. Louis, Mo.

* * *

For the Baldwin Locomotive Works, of Philadelphia, Pa., A. J. Beuter has been appointed representative in Portland, Ore., taking the place of A. Wm. Hinger, the former representative.

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BRICK and CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

A National Common Brick Association on the Delegate Body Plan

IT HAS NOT BEEN the custom of *Brick and Clay Record* indiscriminately to publish letters with anonymous signatures. On the other hand, such missives have been discouraged. If a man really has the courage of his convictions he is not backward in signing his name to his message.

The following letter, however, which we have received and have been led to publish is not in this class. The man who wrote it signed his name, but at his request we are withholding the signature for reasons that are beyond the control both of the sender and the publisher.

Our reasons for publishing the following letter may be quickly summed up in words to the effect that it presents an idea well worth consideration. This idea appears in the closing paragraphs of the letter and is by far the most important part of the message, that which precedes it being more or less in the nature of comment. The letter follows:

BELIEVES GREAT SERVICE HAS BEEN RENDERED

"*Brick and Clay Record,* in sounding the clarion call for an up-and-doing association of common brick manufacturers (or, to be more exact, the manufacturers of common brick) has, in my mind, done more for the brickmaking industry than is realized by anyone directly interested in the production of the commodity in question.

"It has, however, clouded an issue that should have been as clear as crystal, by bringing up the question of a clayworking brotherhood which would include manufacturers of face, fire, paving and common brick, manufacturers of drain tile, sewer pipe and perhaps two or three other commodities, including hollow building tile.

"It takes a simple sum in addition and transforms it into a problem in algebra.

"The same causes that led the manufacturers of face brick to organize an association with an association constitution that expressly provided that its meetings should be held at 'some time and place other than the meetings of the National Brick Manufacturers' Association' prevent any real co-ordination of effort between manufacturers of face brick and manufacturers of common brick. They are not brothers-in-clay, but bitter competitors.

"It is idle to rehearse the bitter fight that has been waged against hollow building tile by manufacturers of common brick. The latter see, in hollow clay tile, a much more formidable competitor than they can find in cement.

"The manufacturers of paving brick have a field that is entirely separate and distinct from the manufacturers of common building brick—or face brick—or hollow tile. They would waste their time and money endeavoring to find problems that were actually pertinent to any of those named. Their only point of contact, today, is where they injure both face brick and common brick, by disposing of their seconds to replace one or the other in building operations.

"The only point where fire brick manufacturers come in contact with manufacturers of common brick is where they—the fire brick manufacturers—sell common brick men fire brick with which the latter build their kilns.

"It is unnecessary to draw further conclusions in regard to drain tile and sewer pipe. The fact is—the manufacturer of common building brick has individual problems—individual competition—and, incidentally, individual individuality.

BIG DEVELOPMENT IN MOST BRANCHES

"The development of every line of brickmaking, aside from common brickmaking, has been marked. The highly specialized fire brick of today bear but little resemblance to the product of even twenty years ago. Face brick has, by perfecting itself, changed the architecture of America in less than that time. Hollow building tile has changed the old hollow brick into an intricate engineering proposition, in which insulation, strength, texture and a host of other qualities have commended it to its users.

"Of all of the lines or classes of brick, common brick alone has stood still. 'A brick is a brick' to its utmost comprehension. The father of all brickmaking trades has become as an infant, when compared to its progeny—an infant in achievement—in progress—in everything that indicates life.

"With few exceptions, its manufacturing methods are those of a past century—and also with few exceptions, its efforts to interest a market ready to its hand have been marked by the advertising methods of the days that followed the Revolutionary War.

"Its problems are insular. Within a circumscribed limit, freight rates may interest it—but not otherwise. It hasn't even the merit of the Danbury hat, that could be shipped across several states. It spreads across this circumscribed limit—trying to keep out the competition of frame, of hollow tile and cement stucco, with an inane slogan—'Build with Brick.'

"And it has never tried to tell why.

"You cannot mix the progressiveness of face, fire, paving brick and of hollow tile, with the unprogressiveness of common brick. It would be like asking high school scholars to sit in class with kindergarten children and 'help' them weave patterns in colored paper and sing simple songs to induce exercise.

URGES DELEGATE COMMON BRICK ASSOCIATION

"Make an association of common brick men that will have a state association in every state. Have them withdraw, if they will, from the so-called clay products associations in the various states, and give their time and attention to the finding of the problems within their own industry, as it affects them in their home towns. In these state organizations of common brick men they will meet, perhaps for the first time, face-to-face with their local competition, which is, for the most part, themselves. This present competition may be made co-operative by association work. Then bring on your delegate plan—representation by states, based on the registered output of common brick in that state—I mean, in that state organization.

"Do not fall into the Senatorial mistake of having an equal number of delegates from each state—the House of Representatives is your ideal.

"And these delegates could make up the National organization.

"Moreover, this can be done, even tho the N. B. M. A. continued in its present benign way to misrepresent an industry."

ALL ARE NOT UNPROGRESSIVE

It is not our intention, in publishing the above letter, to class all common brick manufacturers as unprogressive. Far be it from us to do that. There are progressive individuals in every industry, and that of the common brick manufacturer is no exception to this rule. Moreover, the present state of association work in that industry is more the result of a combination of circumstances than anything else. We believe that nearly every manufacturer of common brick is ready and willing to follow the right kind of leader.

It may be that the above letter may give offense to some because of its plain speaking. If it does, we are sorry. It is not the intention to speak frankly for the sake of hurting any reader's feelings. *Brick and Clay Record* feels that he serves us best who in a kind but firm manner tells us of our faults.

The delegate body plan for a national common brick manufacturers' association, as presented in the above letter, is, as has already been stated, well worth consideration. It may be that a national association of all branches of the industry is not practicable.

Let us have more discussion of this very important subject. It may be that some manufacturers of common brick have something to say on this subject. Let us hear from you.

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McAdoo and Home Building

CLAY PRODUCTS MANUFACTURERS were, no doubt, greatly interested in a statement issued on February 4 by Secretary of the Treasury McAdoo appealing to the public not to build new homes during the war except when the need is urgent, in order to save capital, material and labor, for essential war enterprises.

"Home building is an excellent thing in normal times," his statement said, "but at present, unless there is a real shortage of houses for war workers, I strongly advise that materials, valuable labor, and credit be not utilized for this purpose. Whether homes should be built should be determined by the urgency of the need."

There is no need of this statement frightening anyone interested in the clay products manufacturing industry, for it must be remembered that the construction of homes formed the smallest part of the nation's volume of building during 1917 than for some years past. Very few building material manufacturers have been expecting more homes to be built this year than last, and so why let our souls be troubled in this direction?

Moreover, there is an actual and positive need for many houses to take care of the overflow population in industrial centers whither labor has flocked because of war activities. Thousands of these workers, we believe we can safely say, are without adequate shelter and should be cared for with safe and sanitary homes without delay. This, Secretary McAdoo says, is a perfectly legitimate undertaking.

Building construction for industrial purposes, which was a feature of 1917's construction showing, will continue unabated during the coming twelve months. Not only will this be so but a large increase in this type of construction is confidently anticipated. In this connection, it is interesting to note that by far the greater part of the nation's hollow tile manufacturing capacity is already engaged either by the government for its tremendous contemplated program of emergency construction, totaling in value nearly two billion dollars, or by individual concerns who have government contracts. There is no gloom in the camp of the hollow clay tile makers.

In discussing conditions in the clayworking industry we must never forget the fire brick division. It is hardly logical that this branch of clayworking will be less busy that it was last year and it was "some" busy in 1917.

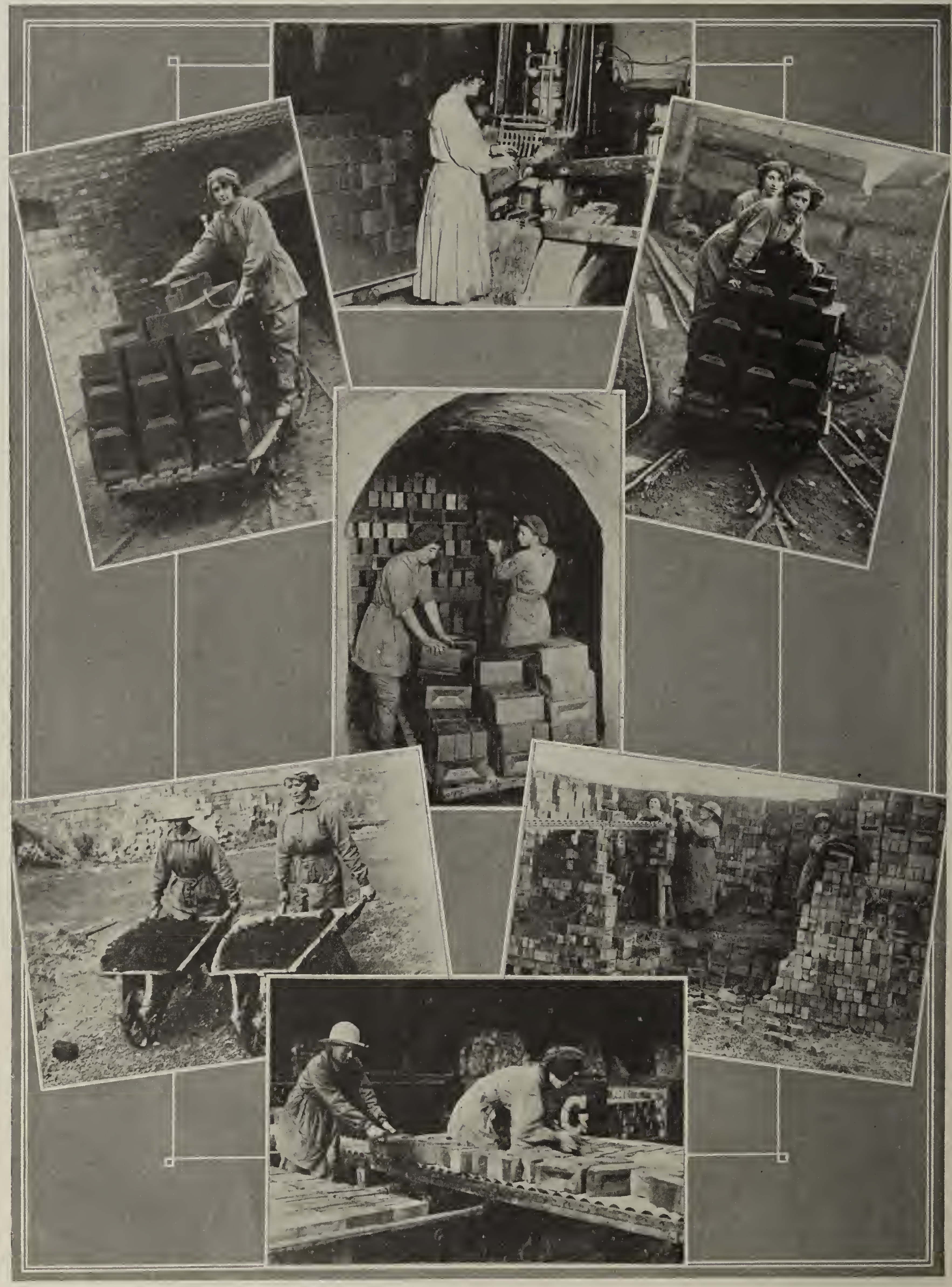
The United States government has considered the continued and increased production of drain tile so essential that it has exempted that branch of the industry from any fuel conservation orders.

Manufacturers of vitrified paving brick have much to look forward to in the contemplated road improvement program for 1918. Officials in power have expressed themselves in no uncertain tones as to the necessity for a selective road construction program as an aid to railroad congestion and to relieve to some extent the terrific strain on the nation's carriers existing at the present time and which will no doubt continue to exist during the coming year.

Attention is just now being directed to operations at Hog Island, Philadelphia, where the government expects to build a large number of ships this year. Before the establishment of the Hog Island plant, thousands of workmen attracted to the Delaware River shipbuilding yards, had utilized all the housing facilities in the district. This made it necessary for the city to co-operate with the government in planning for the reception of the new army which Philadelphia is called upon to accommodate.

More than 10,000 workers will be required to erect the houses in the community which will in the future be the homes of the new arrivals. It is estimated, according to surveys made at the instance of the city, that from 5,000 to 7,500 dwellings will be necessary. The cost will exceed $10,000,000, including wages.

All and in all there is reason to believe that 1918 will see a goodly volume of clay products manufactured for the demands that are being presented, and that we will continue to hear the busy hum of machinery and see the red glow of burning kiln fires.



Two Years Ago, the Fires in the World's Largest Kiln, at Peterborough, England, Were Extinguished, and Work at the Plant Stopped Because of the Shortage of Labor. As the Supply of Brick Was Consumed, an Urgent Demand for More Material Developed, Necessitating the Re-opening of the Plant With Feminine Labor. In the Views Shown Above, Made Especially for "Brick and Clay Record" by the Press Illustrating Service, Inc., Women are Pictured At Practically Every Stage In the Manufacture of Brick, from the Molding to the Shipping. Will American Plants Ever be Forced to this Expedient?

FILLING *the* GAPS WITH WOMEN WORKERS

To What Extent Will the "Feminization" of the Clay Products Industry, Taking Root in the Scarcity of Male Labor, Extend? A Rapid Growth is Improbable; Yet the Experience of Two Companies Shows it to be Possible

GREAT INROADS have been made upon the nation's labor supply during the past ten months, or since America's entrance into the war. Coming upon the heels of the breach of relations and the subsequent declaration of war was a tremendous movement of men from all walks of life into the ranks of Uncle Sam's army. In addition to those who voluntarily offered their services more than 500,000 were taken from the fields of industry and commerce by the draft. When the National Army camps have trained these men to the point of proficiency in the work of waging war, another call for 500,000 or more will be made, and, if the war continues another year, an additional million will be called for to upset the autocracy that today threatens the future peace of the world.

In addition to this tremendous strain upon the labor supply, the production of many billion dollars' worth of war goods has called from the fields of peaceful endeavor thousands upon thousands of workmen. The result has been that the fingers of labor scarcity have gradually encircled the throats of many industries, unable to compete in the labor market with the affluent war goods makers, and are threatening to slowly throttle their activity. No industry has made its escape and the clay products field has come in for its share of reduced operations and curtailed production because of labor shortage.

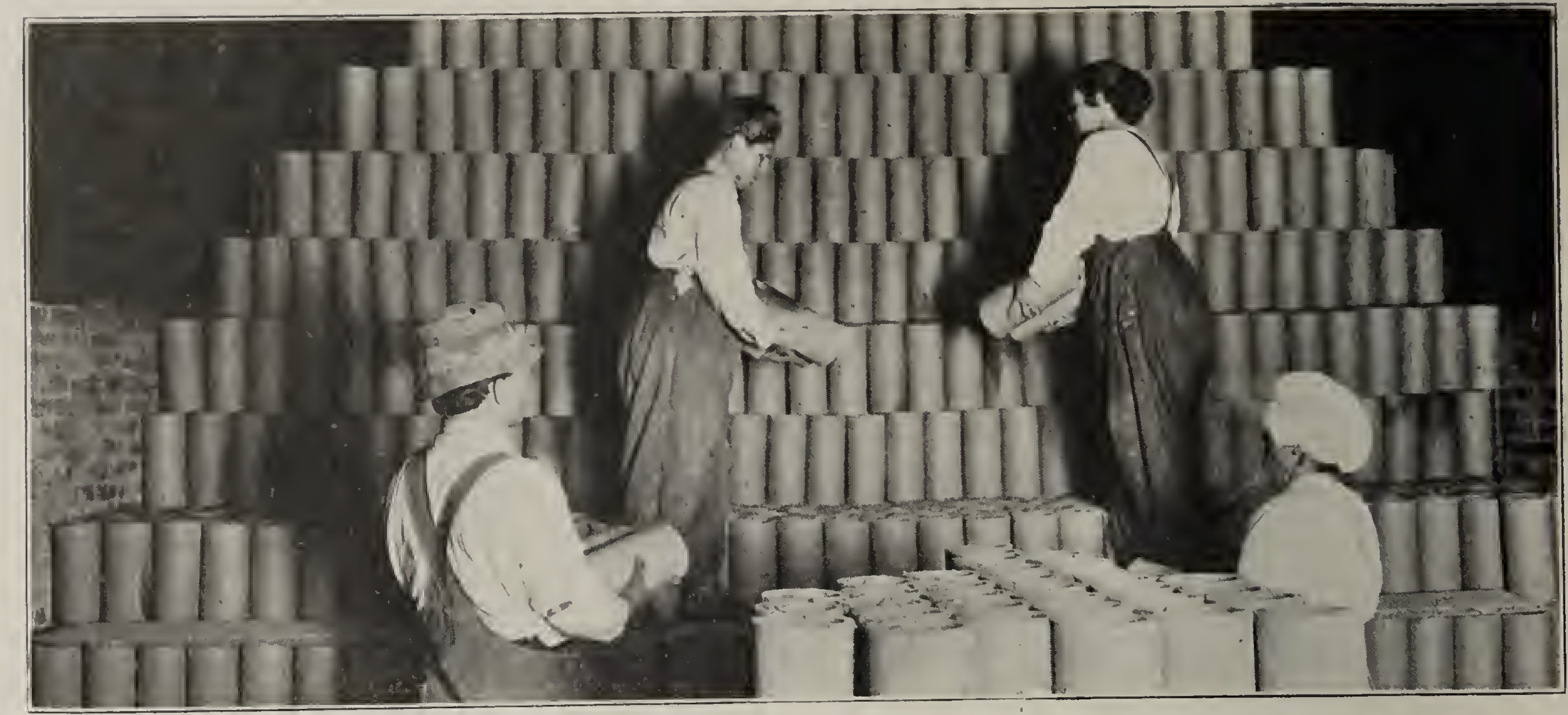
The situation shows but few signs that might be taken as prognostications of improvement. The continuance of the war means a continued and, in fact, an increasing shortage of labor.

Several remedies have been suggested for this serious condition, among the most important of which, so far as the clay products industry is concerned, is the employment of men beyond the draft age and unfit for service in the army and of boys too young to respond to the call. The possibility of substituting women in place of men called from the brick and clay products plants has for a long while seemed to be remote. The hard, strenuous labor involved in the production of clay ware seemingly constituted a barrier to the adoption of the solution which many other industries had successfully applied to the problem. One of the last places where we would ordinarily expect to find women workers would be in the shale pits, machine rooms, and the kiln yards of clay products plants.

DRAWING A LESSON FROM ENGLAND'S EXPERIENCE.

In drawing a lesson from England's experience, however, we find that the plan of employing women, at least in the production of brick, is not only possible, but has proven very satisfactory. With the industrial changes that resulted from England's scarcity of labor, opera-

The Machine Room of the Coast Clay Products Co., of Bellingham, Wash., Where the Deft Hands and the Willing Minds of the Women Workers have Been Successfully Applied at the Off-Bearing Belt.



Altho Setting Tile is Somewhat Strenuous for Feminine Workers Yet There has Been No Sign Evidenced by Those Doing the Work that Would Indicate the Task to be Beyond Their Strength.

tions of England's brick plants were to a large extent curtailed; and as the shortage grew more acute, most of her plants ceased working, since the stocks on hand were sufficient to meet the current demands. Even the large company located at Peterborough, which operates what is said to be the largest kiln in the world, was forced to stop operations because of shortage of labor.

However, as the reserve stocks were absorbed the tremendous demands for common brick, which resulted from the construction of many model villages in the vicinity of munition plants, were supplied the need for renewed production became apparent. By this time the organization of brick companies had disintegrated and the opportunity of employing their former labor was lost. A new source of supply had to be unearthed with the result that women were placed at the posts formerly held by the men. The group of views on page 306 gives an excellent idea of the variety of work which is being performed by the women; their happy countenances are an indication of the spirit with which they are entering into their chosen task.

AMERICAN PLANTS TRY WOMEN.

Almost simultaneously with the announcement of the reopening of the big plant at Peterborough, in England, made possible by the employment of women, came the news that at least two American companies manufacturing clay wares had decided to "feminize" their plants to the extent necessary to overcome the shortage in their labor ranks.

Like plants in all other parts of the country, the Muskogee (Okla.) Vitrified Brick Co. was seriously troubled by the shortage of labor; several of its men had enlisted and many more were taken by the draft. Being located in the South, this company's labor supply was further threatened by the luring offers made in the cotton picking fields during the summer. All of these things put together made serious inroads into its labor supply and in turning to a solution of the problem the company decided to try working women in certain parts of the plant where the physical strain was not too great.

The employment of women at this plant was discontinued after the holiday shutdown because a state law prohibited women working more than nine hours a day, when it was necessary to run the plant machinery ten hours. If it were not for this difficulty, the company, according to M. Hermes, superintendent, would continue employing women help; and if at any time it is short of labor it will put the women back to work again.

However, its experience during the period in which it tried the novel experiment is of value and interest since it indicates the possibilities for the employment of women in the clay products industry if the labor scarcity should

Brick Setting, Requiring More Strength and Speed Than the Setting of Tile, is Done by Men.

View of Part of the Coast Clay Products Co.'s Plant One of the First in America to Employ Women Workers.

become so acute as to necessitate the adoption of such a course.

WOMEN GOOD AT OFF-BEARING BELT.

The women have proved especially adept at the off-bearing belt, learning in a very short time to place the brick on the cars in the proper manner and with greater speed and neatness than a bunch of green men would have done. Out of ten women who were tried on this type of work, seven made good—a percentage which is larger than that usually obtained in the case of green male labor. These seven women handled 100,000 brick a day and received for their labor a wage of $2. That there is a desire on the part of women to do this kind of work is manifest by the number of applications submitted to the company for employment. According to Mr. Hermes over 100 applications were received from women anxious to try their hands at making brick.

The majority of the women on this plant are colored; the negresses seem to withstand the strain of physical labor better than do the white women.

PLAN SUCCESSFUL ON FAR WEST PLANT.

Another company which has written a very interesting letter about the employment of women on its plants and which was exceedingly optimistic about the possibilities of filling the gaps on clay plants with women workers is the Coast Clay Co., of South Bellingham, Wash., of which A. C. Blake is manager.

According to Mr. Blake, war conditions made the future outlook very gloomy. As in the case of the Muskogee Vitrified Brick Co., its organization was affected by the labor shortage and recourse had to be made to some other system than that previously employed. At first it was decided to employ Orientals, but even the supply of Orient workers had been contracted for weeks ahead. The next step, therefore, was the employment of women. "We found that plants in other industries had successfully adopted the plan of employing women," writes Mr. Blake, "and knowing a few stalwart ladies who had worked on canneries and farms, we resolved after consulting them to adopt a similar plan. The women were very responsive to our proposition and they quickly adapted themselves to the work. After a few days drilling by myself and the superintendent, the new workers were setting up a record that was much in excess of our anticipations.

"As conditions changed, a few of the weaker ones dropped out. We replaced them with the masculine help that was available and now we have a balanced mixed crew. It is our intention, as long as we operate to continue to employ feminine help. It is likely that in the future we will again be brought face to face with the labor shortage problem and in this event we will be able to conduct our business with our feminine organization.

"Our experience has been that while we have used them in all capacities on our plant, they are best qualified for off-bearing work, transferring cars, operating dry pans and crushers, sorting and piling stock and setting dry brick and tile in the kilns. They have also proved capable of operating the pugmill and in seeing that the material feeds properly from the bins. This leaves the blacksmithing, repair of machinery, oiling, operating machines and motors, firing the kilns, quarrying, wheeling the raw material from the pits to the bunkers, placing railway cars and scows for loading, and repairing kilns to the masculine help."

Still another company in Pennsylvania decided to use the employment of women workers as a whip to speed up its male organization, and, as published in a past issue, succeeded very well in accomplishing its purpose. It inserted an advertisement in a local paper and received a number of replies both by mail and in person. "This has had its effect," we are informed by the general manager of the company, "and our employes are doing much better." However, women were not actually employed upon this plant.

Two More Views, Received from the Press Illustrating Service, Inc., Showing Women Performing Tasks on a European Brick Plant Which Before the War Would Have Been Considered Strictly Masculine Work.

ADOPTING A SCHEDULE OF WORK.

In reviewing the experiences of the different companies, English and American, it appears that the employment of women in the manufacture of brick and other clay products is a possible development of the present labor situation and that altho the work is in a comparative sense hard and the task one that is sure to strain and roughen the fingers, yet the physical stamina of women is sufficient to withstand the work.

Of course, a division of work must be made and a definite schedule adopted which will place the lighter and less strenuous tasks in the hands of the feminine help and leave to the men the heavier duties around the yard. In executing a program of this kind it has been suggested that where it is necessary to employ women, they be broken in at the off-bearing belt and from there transferred to other places as the vacancies develop. Should a place become vacant that a woman could not fill, such as brick wheeling or setting, a man can be taken from some work which a woman is capable of performing and given the harder work to do, while his position would then be filled by a woman.

After receiving preliminary instructions at the off-bearing belt the women might be shifted to the dry pan or represses and given places in the shading crew or in placing the brick on gravity rollers when that labor saving appliance is in use.

It is of course probable that the feminization of the clay products industry is a long way off, but the few instances presented in this article are of interest inasmuch as they point out the possible places which women can fill and are filling in clay products plants.

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Magnesite Production in 1916

The production of magnesite in the United States in 1916 far exceeded that of any preceding year. The increase was due to the larger demand for refractory magnesite products and to the decline in imports. Tho more magnesite was used in the United States in 1916 than in 1915, the consumption was less than that of any of the three years preceding 1915, and the use of the mineral has now been greatly curtailed by its relative scarcity and high cost.

It is estimated that normally about six pounds of magnesite was formerly used for every ton of steel made by the basic open-hearth process, but not more than half a pound for every ton is now being used, and at some steel plants cheaper and less satisfactory refractories have been substituted for magnesite. Owing to its use in the steel and copper industries magnesite is an important, tho a minor war commodity, and the need for it in these industries is so great that its lack has often been viewed with apprehension.

The properties that made the largest production in 1916 are in Tulare County, Cal., tho considerable quantities were produced also in Santa Clara, Sonoma, Napa, Kern and Fresno counties, Cal., and from deposits recently opened in Stevens county, in eastern Washington.

A Big Market is Developing on the Farm

If the future fulfills the promises of the present, some rural districts of Ohio will be transformed in appearance within the next year or two. That transformation will come about thru the building of bigger and better farm homes, of bigger and better barns, and a tremendous increase in the numbers of bins, cribs, implement sheds, garages, hog houses, poultry houses and all various other forms of outbuildings necessary in modern farming. The farmer, on the top wave of prosperity, is going to put his "war profits" into improvements on "the place," and those improvements will include whatever comforts and conveniences he may have lacked in leaner years.

Those who make a business of watching the trend of industrial activity say that while unprecedented prosperity is the principal reason for the widespread activity in rural building, that is not the only reason. They say the American farmer, and his wife and children as well, is just awakening to the realization that he need not deny himself the comforts and luxuries of city homes just because he lives on the farm, and now that he has the money coming in, he is going to enjoy those advantages. Furthermore, the farmer is finding out that his buying power of the commodities that he produces on the farm is in the purchase of many things about twice what it was a few years ago.

When he does begin to turn the profits of the past year into improvements upon the farm, will he give the proper amount of attention to burned clay materials or will the immense publicity campaigns of concrete influence him to think only in terms of that material? The market is sure to develop; and now is the opportune time for brick, hollow tile, and drain tile manufacturers to begin intensive cultivation by the means of forceful publicity work.

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DEMURRAGE RULES AGAIN REVISED

THE DIRECTOR GENERAL of Railroads has changed front upon the demurrage code that became effective by his direction on January 21. Following strong protests from the National Industrial Traffic League, orders have been issued restoring, in modified form, both the average agreement and the bunching rule eliminated from the rules by the January 21 code. At the same time, further changes have been agreed upon in the rates themselves; these changes, while designed to penalize the car hog still more heavily, also make more effective provision for the shipper who is compelled, by force of circumstances beyond his control, to detain a car beyond the free time allowed under the demurrage rules. The revised regulations and rates become effective February 10 by special permission of the Interstate Commerce Commission.

The new rates for cars held after the expiration of the free time allowed for loading or unloading are fixed on the following basis: $3 per car per day for the first four days under car service charges; $6 per car per day for the next three days and $10 per car per day for each day thereafter. The January 21 code provided for an initial charge of $3 and an increase of $1 per car per day until the charge of $10 per car per day had been reached. While the new code penalizes the shipper holding a car up to the $10 period more heavily, it is less drastic upon the shipper detaining equipment two or three days after the expiration of the free time allowed.

The restoration of the average agreement is limited in its application to inbound traffic. Under this, one credit will be allowed for every inbound car released within the first 24 hours' free time. Credits so accruing may be used to offset not to exceed four debits upon any one car detained beyond the expiration of the free time limits set in the rules. When cars are held beyond the first four days after the expiration of free time, the charges will apply upon all subsequent Sundays and holidays.

The bunching rule, which is, of course, not available to shippers working under the average agreement, has likewise been limited in its application to inbound freight. As agreed upon after conference between representatives of the National Administration, the shippers and the carriers, it will read as follows:

"Cars held for unloading or reconsigning.—When, as the result of the act or neglect of any carrier, cars originating at the same point or at intermediate points, moving via the same route, and destined for one consignee, at one point, are bunched at originating point, in transit, or at destination, and delivered by the carriers in accumulated numbers in excess of daily shipments, the consignee shall be allowed such free time as he would have been entitled to had the cars been delivered in accordance with the daily rate of shipment. Claims to be presented to carrier's agent within 15 days."

GETTING BETTER BURNS *and* SAVING COAL *with the* PYROMETER

This, the Fourth Article of the Series on Fuel Topics, Shows How the Application of the Pyrometer to Burning Reduces the Length of the Burn and Therefore the Coal Consumption; Not a "Shovel a Day", as Uncle Sam Asks, But 500 Pounds to the Thousand Brick

By T. M. McVay

Ceramic Engineer of the Streator (Ill.)
Brick Company

PYROMETERS OF A GOOD GRADE are valuable aids to proper burning. They will help to save coal, shorten the time of burn and enable the burner to reproduce good burns. They are helpful in obtaining colors, the colors that the trade desires. It must be realized, however, that pyrometers alone will not burn brick.

The main guides to good results in burning are draw trials, settle measurements, draft gauges, cones, and pyrometers. As a matter of general information we will take each one separately and later show the relation of the one to the other.

First, in regard to draw trials if a clay contains a great deal of carbon, it is very necessary to remove brick from the kiln in order to determine when oxidation is completed. Also near the finish of the burn, trials will show the condition of the burning and will give some idea of its progress.

Second, settle measurements are very valuable in determining the burning behavior and the rate of progress of the burn. Such measurements will denote whether the burn is progressing too fast or too slow and will indicate the danger points. If the settle starts early in the burn before the heat reaches the bottom, the burner will know at once that the shrinkage is not uniform thruout the kiln, and that the burn will be hard on top and soft in the bottom. If the kiln settles fast dark brick may be expected, or a sudden drop may denote black coring and the consequent melting down of the ware.

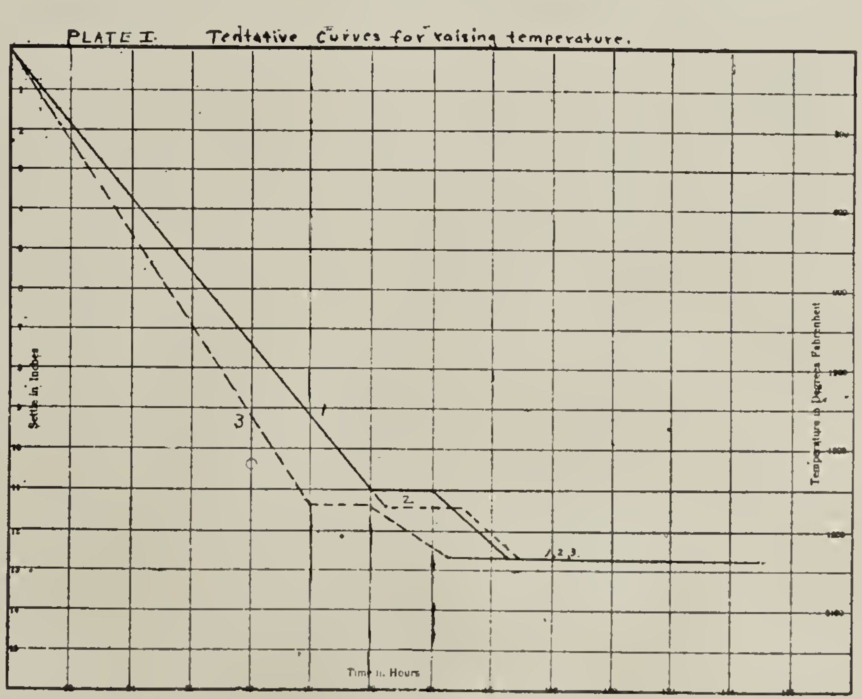
Third, draft gauges are valuable in regulating the proper amount of air passing thru the kiln. By using them as a guide in adjusting the damper, it is possible to produce a desired color of the brick by controlling the oxidizing and reducing conditions.

Fourth, cones are of more value in burning materials, such as fire clay, that require a higher temperature than the shales. The low temperature cones contain a large percentage of fluxes, such as iron, which are greatly affected by oxidation and reduction. Under constant gas conditions and in measuring the effect of high temperatures, cones are invaluable. In ordinary down-draft kilns for burning face or paving brick the alternate reduction and oxidation will cause them to be inaccurate.

Fifth, by using pyrometers properly, we can ascertain the exact temperature at any time. They will show whether the burner is raising the heat too fast or too slow, and will prevent a sudden raising or lowering of the kiln temperature. They are an aid to the production of desirable colors. For these reasons pyrometers are more valuable than the other guides.

USE INDICATING AND RECORDING PYROMETERS

It is advisable to have both an indicating and a recording instrument installed. Good results can be obtained by the



Tentative Curves to be Followed in Burning Should First be Drawn and then, Based Upon the Results Obtained, Graphs can be Plotted which Fit Conditions More Perfectly.

use of the indicator alone, but the recorder is of great help in checking up the burners and in keeping records.

The most common reason for the bad behavior of pyrometers is the ignorance of how to handle them, because too much reliance has been placed upon the instrument. Some manufacturers make very exaggerated claims for their installations, so that the customer expects more than he should. Pyrometers, compared to other machinery around a brick plant are very delicate. Care must be exercised in keeping every part in good working condition. At regular intervals the entire system should be inspected, all broken parts replaced, and loose joints soldered. After several years' service the platinum couples become brittle or crystallized. They should then be annealed and standardized.

Let us now see how these different guides are related. In burning shales, high temperature and high draft will produce slower settle than a high temperature and low draft, also the former conditions will produce lighter colored ware than the latter. Low draft denotes a reducing condition in the kiln and since clays containing fluxes soften faster under reducing than oxidizing conditions the settle will be greater. Reduction hastens the formation of the various complex silicates produced in burning, notably iron, which has a great affinity for lime and silica when in the ferrous than in the ferric form. Conversely, a fast settle usually denotes reducing conditions in the kiln.

Temperature and draft are also related. By proper draft regulation the temperature can be controlled, provided the fires are kept in the proper condition. Light and heavy firing also help to regulate the temperature and the color of the ware. Light firing saves coal while heavy firing drives off the volatile hydro-carbons very rapidly and lets them pass out the stack. Light fires and strong draft will produce light colored ware, and vice versa.

PROCEDURE TO FOLLOW IN USE OF PYROMETER

The uses of the pyrometer may again be stated briefly. (1), to ascertain the temperature at any time; (2), to guide in raising the kiln at the maximum safe speed and holding it at a safe temperature; (3), to prevent sudden rising and cooling; (4), to produce the color of ware desired.

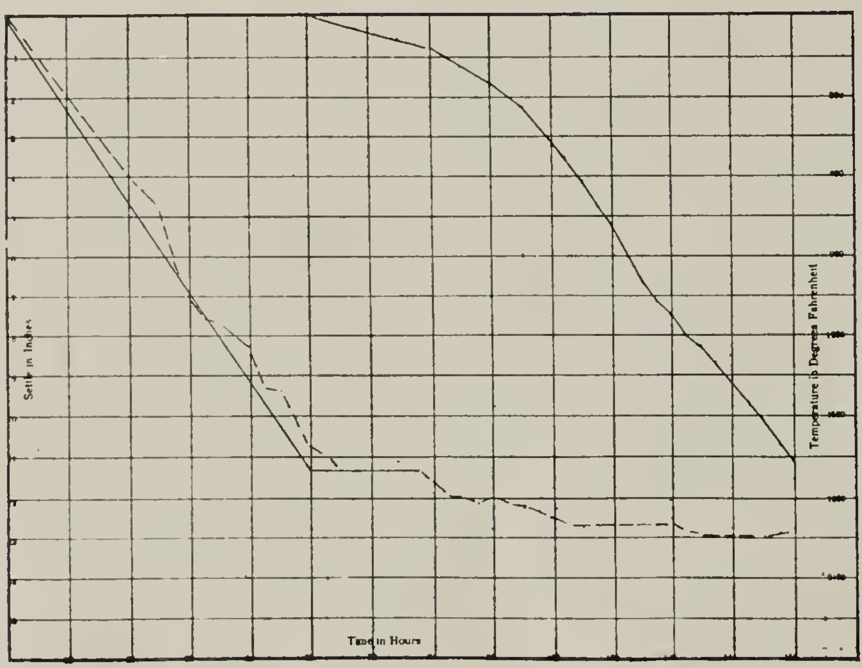
A burner cannot judge heat from day to day by the eye within a range of a hundred degrees, but if he knows the exact temperature at one spot in the kiln he can regulate the fires in the fire boxes and keep them all at the same intensity. Invariably, a kiln appears hotter on a dark day or at night than in the sunlight or moonlight. If the kiln is full of smoke the color is, of course, different than when it is clear, and these varying conditions add to the burner's troubles. The most efficient burn is the one where the burning time and the fuel consumption has been cut down to the minimum with the largest percentage of No. 1 ware. By keeping the records from the pyrometer, the best burning procedure can be determined and then reproduced. As a general rule, no two kilns have the same burning behavior, due to construction and location. It requires a great deal of experimenting to determine the maximum safe rate of raising the temperature and the proper finishing heat.

STREATOR BRICK COMPANY
BURNER'S DATA SHEET
KILN NO. 10.

Lighted 4 PM Nov 27. 1917 Finished 3 Am Dec 4. 17.
Total number pounds coal used 80925 Coal per M 117.7.
Temperature—Top Bottom
Number of hours for water smoking Total time for burning 155

TABLE OF KILN OPERATION

TIME IN HOURS	60	72	84	96	108	114	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168
Tentative Draft in hundredths of an inch				18	18		18		18		18		18			18		18					
Actual Draft in hundredths of an inch	10	14	16	16	16		17		18		18		18			18							
Tentative rate of settle per hour in eighths of in																							
Actual settle in eighths of an inch		3	3	7	5/7	4/4	5/4	5	6	4	3	4	2	3	4	4	4	4					



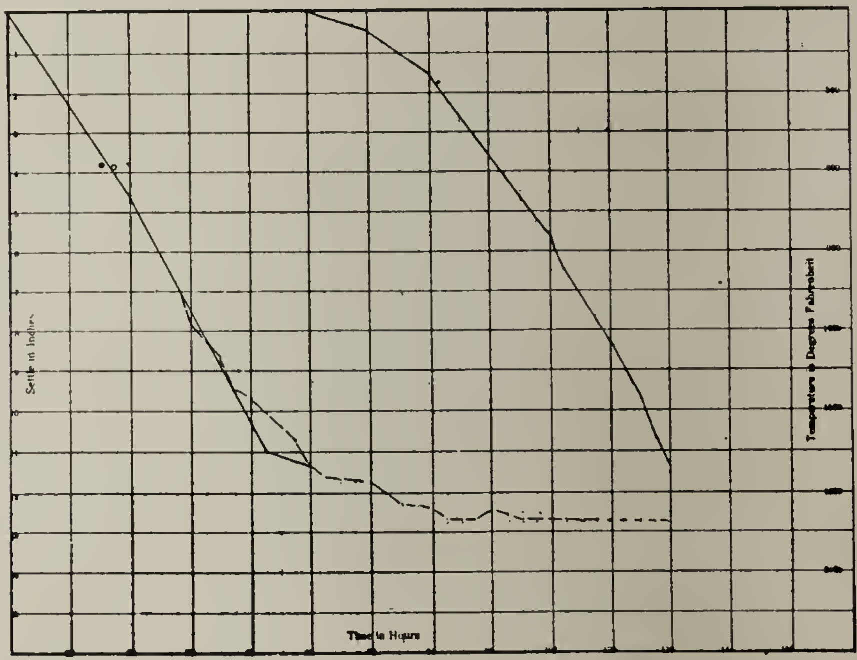
MEMORANDUM:

STREATOR BRICK COMPANY
BURNER'S DATA SHEET
KILN NO. 7.

Lighted 4 P M May 8 1917. Finished 3 A M May 14. 1917
Total number pounds coal used 69130 Coal per M 1083.
Temperature—Top Bottom
Number of hours for water smoking Total time for burning 131.

TABLE OF KILN OPERATION

TIME IN HOURS	60	72	84	96	108	114	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168
Tentative Draft in hundredths of an inch	All [illegible] per.		18		17	17		16		16		16											
Actual Draft in hundredths of an inch	13	17	18	17	17	17		16		16		16											
Tentative rate of settle per hour in eighths of in																							
Actual settle in eighths of an inch		4	8	16	8/9	7/4	5/6	5	5	8	6												



MEMORANDUM Trials 5½" Both sides.

The Horizontal Scale Divisions on These Charts Represent Twelve Hour Intervals of Time. Each Vertical Division on the Left Represents an Inch of Settle and on the Right, One Hundred and Fifty Deg. Fahr. Difference in Temperature.

A good system in burning is to draw a curve card with temperature plotted against time (Plate No. 1). The same card can be used for recording the settle. When making the first burn see that you are absolutely safe in raising the temperature to a red heat on top. For instance, you may get a red heat on top in seventy-two hours. Draw your curve as in No. 1, then hold. A safe oxidation heat for the majority of clays is 1,650 deg. Fahr. The brick will not begin to vitrify and the porous structure will readily allow the escape of all gases. Hold the kiln at this temperature until it is red thruout, then raise to 1,800 deg. Fahr. in order to get the kiln uniform and then gradually raise to a safe temperature and hold until the end of the burn. At intervals of six hours determine and record the draft. You can judge whether you are raising the heat too fast by the appearance of the stack gases and also by the condition of the fires. If the kiln turns out good, try raising to 1,700 deg. Fahr., as in curve No. 2, and then raise as in No. 1 to the finishing point. If the results are satisfactory, try raising the heat as in No. 3. Owing to the great difference of burning behavior of different clays, no fixed rule can be made to apply to all materials.

STREATOR BRICK COMPANY

BURNER'S DATA SHEET

KILN NO. 8·

Lighted 4 PM Nov 17,'17 Finished 6 PM. Nov 24 '17.

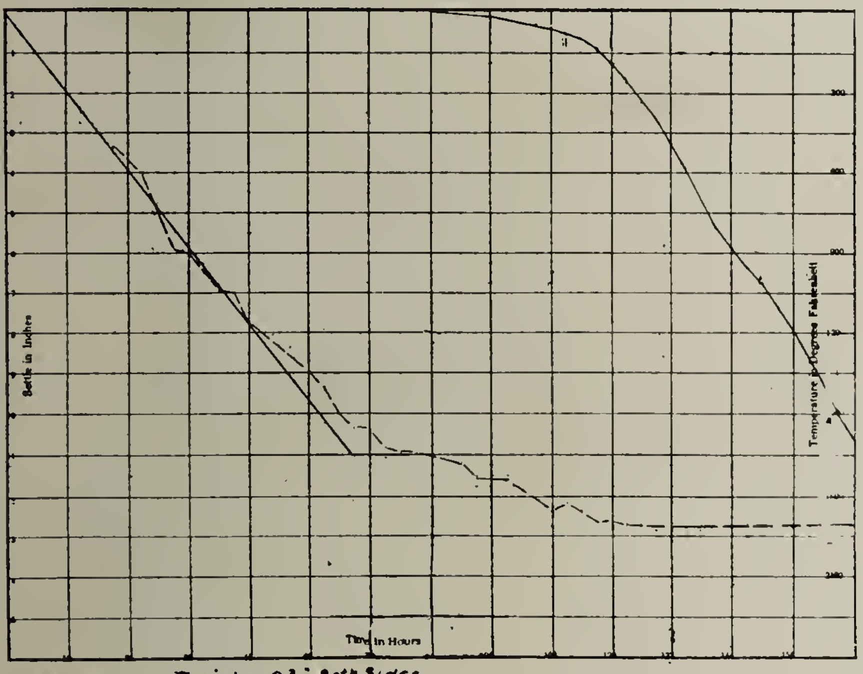
Total number pounds coal used 84 920 Coal per M 1082

Temperature:—Top Bottom

Number of hours for water smoking Total time for burning 170

TABLE OF KILN OPERATION

TIME IN HOURS	60	72	84	96	108	114	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168
Tentative Draft in hundredths of an inch	Al ← ca	you n give	→	18		18	18		18		18		18		18				18				18
Actual Draft in hundredths of an inch	8	12	12	18	18		18		18		18		18		18				18				18
Tentative rate of settle per hour in eighths of in																							
Actual settle in eighths of an inch	0	0	0	1	2	1/1	2/3	3	4	4	3	5	6	6	4	4	3	5	5	5	5	6	5



MEMORANDUM Trials 8 3/16" Both Sides

STREATOR BRICK COMPANY

BURNER'S DATA SHEET

KILN NO. 3

Lighted 4 PM. July 6. 17. Finished 1130 AM July 12-17.

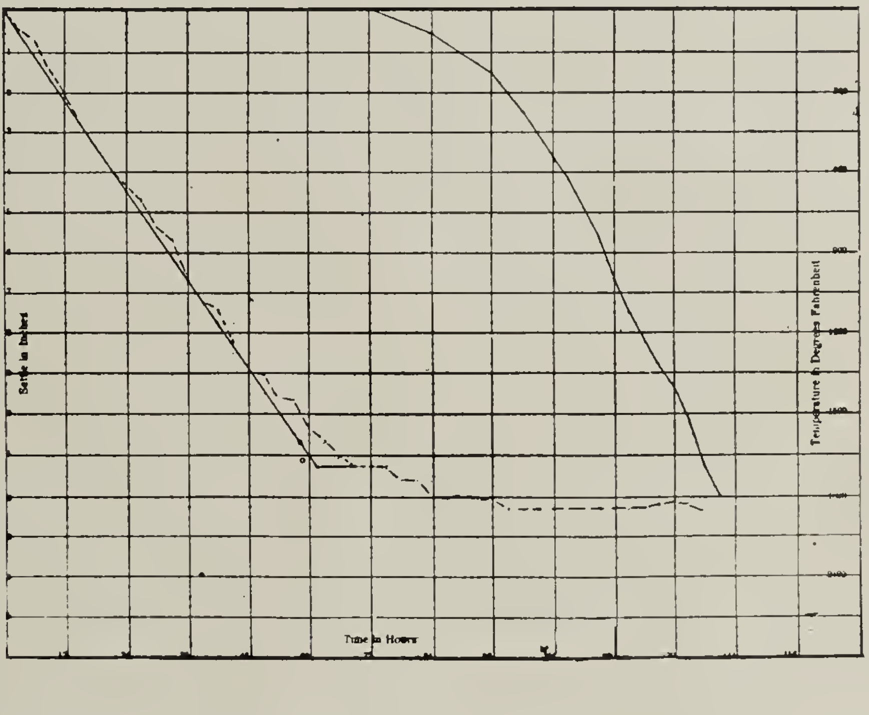
Total number pounds coal used 73670 Coal per M 1100.

Temperature—Top Bottom

Number of hours for water smoking Total time for burning 139½

TABLE OF KILN OPERATION

TIME IN HOURS	60	72	84	96	108	114	120	123	126	129	132	135	138	141	144	147	150	153	156	159	162	165	168
Tentative Draft in hundredths of an inch	All ← [illegible]	you [illegible]	18		16	16	16		16		16.			very low									
Actual Draft in hundredths of an inch.	18	18	18		16		16		16		16			8 -									
Tentative rate of settle per hour in eighths of in																							
Actual settle in eighths of an inch		0	4	8	8/9	4/6	6/8	7	5	5	7	6	7	6									



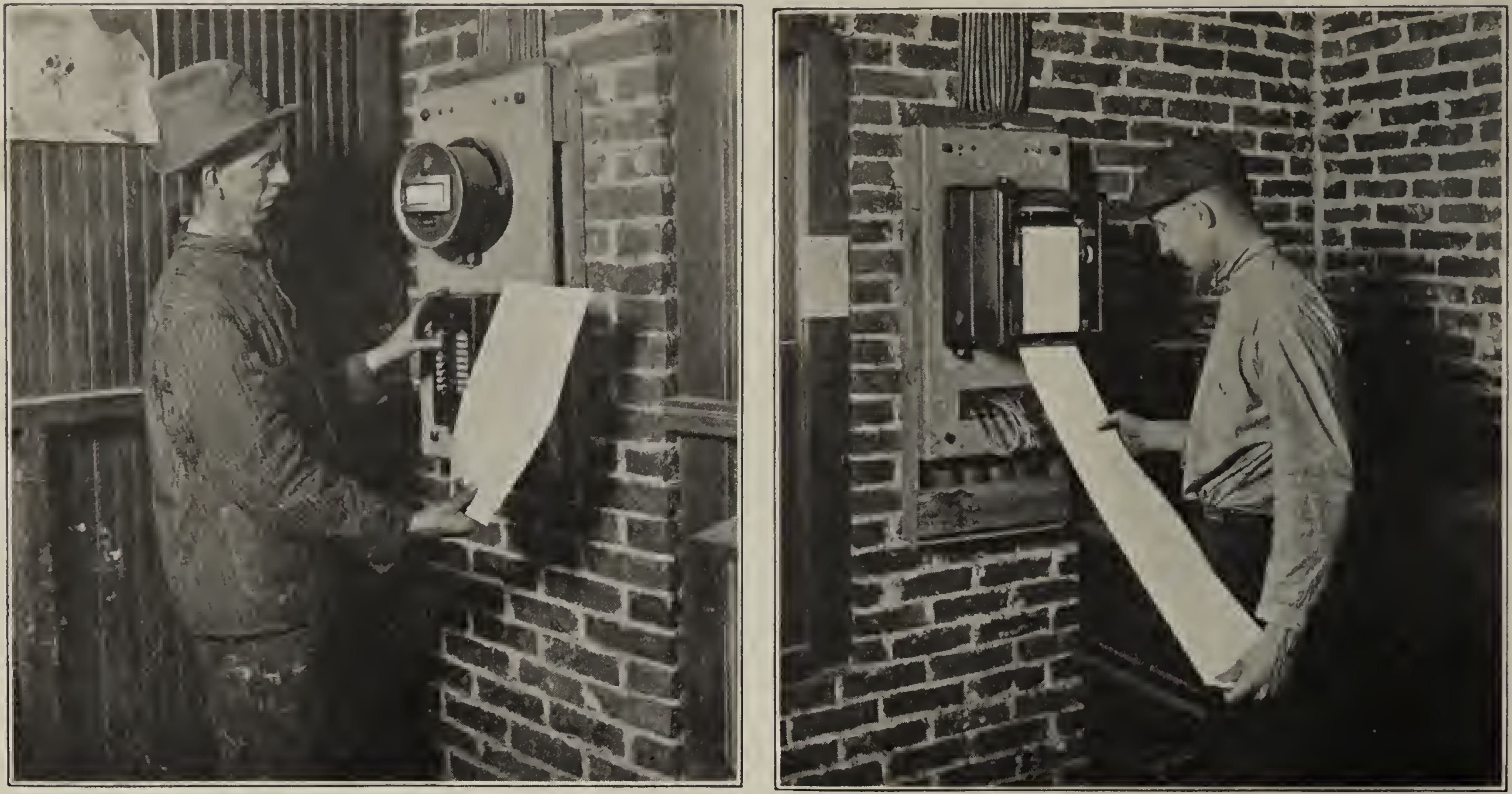
Both the Settle and the Temperature Plotted Against Time May be Placed on the Same Card. The Above Two Charts and the Two on the Preceding Page Show Burning Curves Which are Explained in this Article.

If you should run into the difficulty of black coring and swelling slow up your heating curve and hold the kiln at a lower temperature. When we were raising the temperature of the kilns, filled with standard brick, to 1,750 deg. Fahr. in sixty hours and holding them at this temperature until red thruout the entire brick, we were troubled with black coring. Under ordinary conditions 1,750 deg. Fahr. in sixty hours is safe for our ware. We slowed up the tentative curve to 1,650 deg. Fahr. in seventy-two hours and held our heat at this temperature until the kiln was red thru and the trouble ceased. Now we are raising to 1,700 deg. Fahr. in fifty-seven hours. We know that 1,650 deg. Fahr. on top would not swell the brick, as we found by draw trials that the brick were porous and were oxidized.

The third important factor is to be able to regulate the firing periods and the amount of coal shoveled so as to raise the kiln in a straight line and hold it at the temperature desired. Any cooling of the kiln is costly since it will require heat to get it back to the proper temperature. Long periods between fires and heavy firing are not economical, as the large amount of coal produces an excess volume of unburnt hydro-carbons which pass out of the stack as lost heat. Also, in cleaning kilns many burners fill up the boxes regardless of the after effects and the result is a sudden jump in temperature.

THE PYROMETER AS AN AID FOR OBTAINING COLOR

Shale face brick are noted for their rich and harmonious colors, and it is one of the main problems of the burner to produce the beautiful shades of browns, reds and blacks. For this reason we have two distinct types of burns. The reds and browns we get by one method, and the blacks by another. The variations between the two are obtained by slightly varying conditions. The start of the burn is the same in both cases, the temperature being raised to 1,700 deg. Fahr. in fifty to sixty hours for standard brick, and



It is Recommended that Both Indication and Recording Pyrometers be Installed. Good Results can be Obtained by the Use of the Indicator alone, but the Recorder is a Great Help in Checking up the Burners and in Keeping Records. One of the Streator Brick Co.'s Burners is Shown on the Left Using the Indicating Instrument, While Mr. McVay, on the Right, is Studying the Progress of the Entire Burn by Means of the Recording Instrument.

seventy-two hours for floor tile. The kiln is then allowed to soak at this temperature until it shows red thru the bottom peep hole. After this period is passed, the heat is raised to 1,800 deg. Fahr. and held to equalize the temperature. From this point the divergence takes place.

For reds we carry a light fire with a good strong draft and a space of two to three inches open between the coal and the arch of the fire box. The temperature is held at 1,925-1,950 deg. Fahr. The settle must proceed very slowly and will do so under oxidizing conditions. If it proceeds faster than five-eighths inch in three hours the temperature is lowered, so that it may settle more slowly.

For blacks a heavier fire is carried with the boxes one inch open and a draft which is a trifle sluggish. A temperature of 1,875-1,925 deg. Fahr. is reached. During the last three hours the draft is cut very low and the boxes are banked full of coal. In this kind of burn the pyrometer is of the greatest aid, because under these reducing conditions the settle proceeds rapidly and with such high temperature the kiln is liable to be overburned. A difference of a few degrees under this intense reduction may cause the brick to melt or become twisted.

For dark center, flashed ware the kiln is burned according to the same procedure as for red, that flashed for an hour. For salt glazed ware the kiln is burned the same as for blacks but is not smudged, and is salted at 1,925-1,950 deg. Fahr. Our shale takes a good salt at this temperature. Most clays require a higher temperature than the above in order to obtain a good glaze.

BURNING!

Burning, the most interesting topic on earth to the manufacturer of clay products, is going to be dealt with at length in the next issue of "Brick and Clay Record."

Four articles on coal, oil, and gas firing will be included in the February 26 number, and will constitute the fifth section of the Fuel Saving Articles Which "Brick and Clay Record" is Publishing.

Watch for it! You will want to read every word published; and you will want to keep on file for future use the BURNING NUMBER.

BURNING CURVES AND RESULTS OBTAINED

Card No. 1 represents a good red burn. The actual heat curve progressed slower than the tentative heat curve. The settle progressed slowly and the result was an excellent kiln of brick, light browns on top and dark red in the bottom.

Card No. 2 is a representative bad burn. The heat was raised too rapidly after sixty hours, causing too fast a settle. The heat should have been held at 1,700 deg. Fahr. until the kiln was red in the bottom. The result was a kiln with an overburned top.

Card No. 3 is a representative good floor tile burn. On account of the brick being set close together it required a long time for the heat to reach the bottom of the kiln. The slow settle and the long burning time resulted in a good kiln of floor tile.

Card No. 4 represents a good dark burn. The heat followed closely the tentative curve. The settle proceeded rapidly after ninety-six hours. The heat was low but the low draft caused the kiln to settle rapidly. This kiln was smudged the last three hours. The result was a good black kiln, uniform in color.

This system was started at our plant in April, 1915, under the supervision of Mr. A. E. Williams, now of the Bureau of Standards. Up to the present time 700 kilns have been burned and the records kept. The results, as shown by the

(*Continued on Page* 335.)

SEWER PIPE SLABBING— ITS CAUSE *and* CURE

Go to the Source of an Evil to Effect a Permanent Cure, is the Advice Given by the Writers of the Following Three Articles, All of Whom Point an Incriminating Finger Toward the Die. When You Have Minimized Lamination and Given the Body an Open Structure by the Addition of Grog, Then Look to Your Burning

Does slabbing in drain tile and sewer pipe occur in the vitrification as well as in the watersmoking period of the burn? Is the source of slabbing to be found in the burning of the ware, or is the manipulation of the fires secondary to the construction of the die? What ARE the causes of slabbing, and presuming to know the causes, what are the cures?

These were a few of the big questions discussed in the very excellent article, "Watersmoking and Vitrification Slabbing in Drain Tile and Sewer Pipe," which appeared in the November 20, 1917, *issue of* Brick and Clay Record, *and which was written by the superintendent of a large sewer pipe plant in the Middle West.*

Later, in the January 1 issue, was published a symposium of opinions regarding slabbing, in which was discussed at length the theories advanced in the article referred to; and in which many additional suggestions for the elimination of slabbing were made.

As predicted in the January 1 issue, additional letters have been received which contain information so constructive and valuable as to warrant their publication here. Especial attention is called to the reply by the author of the original article to the criticisms made by Mr. Karzen of the theory which he advanced.

WITH ALL GOOD FEELING, I wish to object strenuously to the caption used in the comment on my article on "Watersmoking and Vitrification Slabs in Drain Tile and Sewer Pipe," that was published in the November 20 issue of *Brick and Clay Record.*

The theory of slabbing during vitrification was referred to in the January 1 issue of *Brick and Clay Record* as a myth. Now, without going to Webster, my understanding of the definition of a "Myth" is something written or told without any foundation for truth and merely for the amusement of the reader, or perhaps, to point a moral. The intention of the article on slabbing was not to amuse, neither were the conclusions reached without good foundation.

Taking up the case made against vitrification slabbing by Mr. Karzen, I do not doubt for an instant that all of his experience has proved to him that slabbing occurs only in the watersmoking stage. I have had some experience with Ohio and Pennsylvania No. 2 fire clays, but I can assure you that the behavior of the No. 2 fire clays of this state are entirely different. We are using a mixture of fairly plastic No. 2 fire clay and a glacial clay.

UNEQUAL SHRINKAGE SHOWN BY DRYER LOSS

The latter is of a medium fine grained and a little more plastic than our fire clay. The proportions are two of fire clay to one of glacial . Mr. Karzen does not seem to think that there is a chance for unequal shrinkage in a pipe with a shell 2½ in. thick. If it were not a fact that there is unequal shrinkage in such ware, there would be little dryer loss and far less cracked ware in the kilns.

Conditions, at least in our kilns, are ideal for unequal shrinkage to occur. For instance, a 36-in. tile is filled with a 22-in. tile; the 22-in. with a 14-in., and the 14-in. with an 8-in. Each of these tile are, of course, set on a ring, and the ring is leveled up on the floor by means of soft chuck, or strips of clay, just as it comes from the press. The chuck will not follow the circle of the ring exactly, and so further retard the draft.

When a double door is built in the kiln, a dead air space is left between the two doors, to further insulate that part of the kiln and prevent heat loss. This latter condition exists in the air space between lamination, only, of course, on a much smaller scale, but would have its effect, nevertheless.

It is also well known that a cracked pipe, set in a kiln, comes out not with a smaller crack but a larger one, in spite of the fact that the pipe has shrunk, showing that the shrinkage magnifies the defect, rather than lessens it.

I fully realize that watersmoking is not complete until the chemical water is driven off, and being aware of this fact, we had, previous to the use of grog, tried many different rates of rise in temperature during this entire period. Had I not been absolutely convinced that we had at our plant the two different kinds of slabbing the article never would have been written. The object of the article was to possibly give a new idea to some fellow clayworker, who had tried, as we had, to eliminate this trouble during watersmoking, and had failed.

CONDITIONS VARY AT DIFFERENT PLANTS

Conditions differ at different plants, and no one is warranted in saying that what holds true at my plant holds true at the other fellow's plant. I do not question for one minute that all Mr. Karzen's observations have led him to discredit any possibility of any slabbing he has ever seen being due to too fast watersmoking, and further, I firmly believe that had he been with me at this plant, he would be as thoroly convinced as I am that vitrification slabs were a stern reality.

To cite a case in point that will illustrate how one line of investigation carried on at one plant will lead a man to draw correct conclusions insofar as that particular plant is concerned, but which would prove decidedly incorrect at any other plant, Mr. Karzen, as he stated in a recent article, proved beyond a doubt that iron spots were not brought out on his ware by any reduction during burning previous to salting. This may be true on his plant; but we have some flue lining that, of course, was not salted and was burned to a much lower heat than it required for salting, and yet it is as rough as a colander, due to reduced iron.

I find that hard and fast rules are very rare things in the manufacture of clay ware, especially those lines of the industry that are not compounding their own body mixes.

SLABBING CAUSED WHEREVER GAS IS EXPELLED

The following excellent article, filled with constructive suggestions, comes from the pen of Joseph K. Moore, production manager of the Streator (Ill.) Clay Manufacturing Co.:

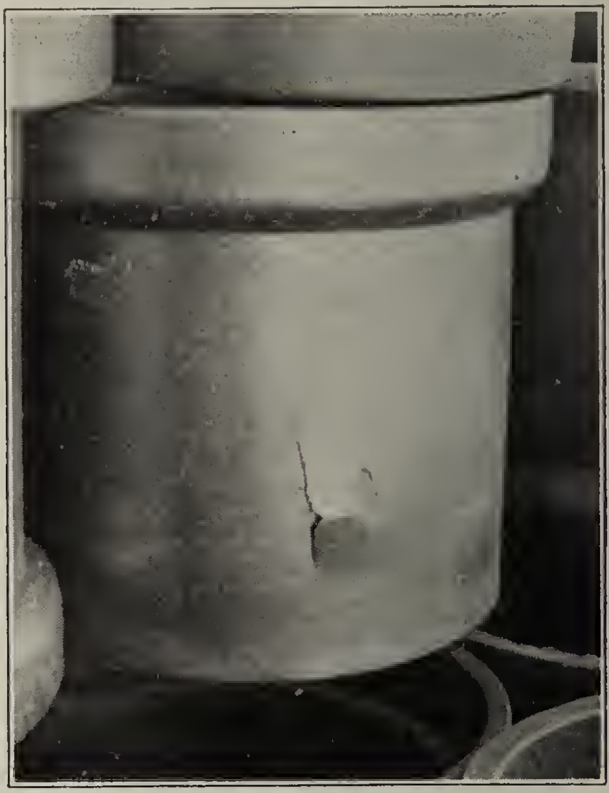
ONE OF THE PROBLEMS frequently encountered in the manufacturing of sewer pipe or large drain tile, according to the experience of the majority of manufacturers, is that of the ware slabbing or blistering and it is intended that this article shall give some aid to those interested in eliminating this difficulty.

Slabbing or blistering may originate in the manufacturing stage and exhibit itself in several places during the burning. The kind of clay plays an important role in this trouble.

GROG NEEDED IN FAT CLAYS

1. Fat clays such as fire clays and some shales have a tendency to laminate badly when passing thru the die. If there is any unequal flow, and there usually is in piston presses, these clays have a strong tendency to form smooth surfaces where the clay slips and decided lines of cleavage are developed in the ware. This lamination usually can be broken up by the use of sand or better grog. Grog is a utilized scrap, a waste product, and should be used. The size of this grog should be the same as the clay used.

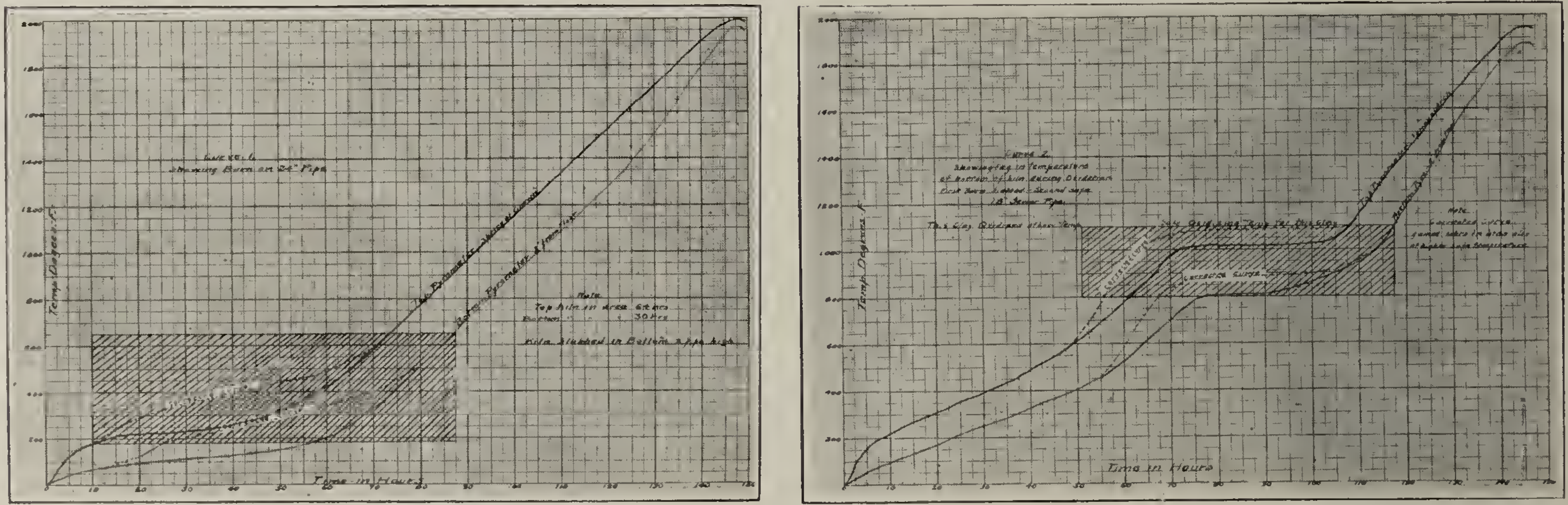
When fat clays are being used, the pressman should use especial care in letting down the press head. Blisters are very often entirely eliminated by care in this particular. If the press head is allowed to slap down on the body of clay in the cylinder, air is introduced in the clay which causes the surface to blister as it issues from the die. If this condition arises and it is desired to save a particular run, a man can be sent thru the patch of pipe with a lantern puncturing the blisters and smoothing them down. Thousands of pipe and tile have thus been saved and come thru the burning safely.



This is a Good Example of a Vitrification Slab, Formed During the Last Stages of the Burn. Vitrification Slabs Seldom Separate from the Ware.

Lamination is probably the original cause of fifty per cent. of the slabbing trouble; of course, the trouble exhibits itself in the burning but the source is usually farther back.

Much lamination is caused by faulty die construction, but very little scientific work has been done along this line to overcome the defect. Geo. D. Morris published the results of some research in the Transactions of the American Ceramic Society, Volume XIX. (This material was published in the October 23, 1917, issue of *Brick and Clay*



The Graphs on the Left Show that the Top of a Kiln of Twenty-four Inch Pipe was in the Watersmoking Area Sixty-four Hours While the Bottom Remained in the Same Period for Thirty Hours. This Kiln Slabbed at the Bottom, Two Pipes High. The Graphs on the Right Show an Area for Safe Oxidation for this Type of Clay.

Record. Also, Mr. Morris, in his contribution to the original symposium on slabbing, which appeared in the January 1, 1918, issue, further emphasized the relation existing between die construction and slabbing.)

We need more serious work along this line. Lamination is very often corrected by proper die construction. The relation of the length of finish of the bell of the die to the outside, the length of finish itself, the amount of clay space between the spider and the bell, the amount of steam pressure are all points that have to be examined closely when lamination is to be minimized. Lamination is very often practically eliminated by either lengthening the finish on the bell or die or equalizing the finish. It is generally recognized that the finish on the bell and die should be very nearly equal and should be as long as can possibly be allowed by the piston pressure used.

Lean clays very seldom cause trouble at the press, but sometimes they slab in burning from lack of bond.

SLABBING CAUSED WHEREVER GAS IS EXPELLED

Most people who have kept careful and consistent data, and at the same time have observed carefully and intelligently, have found that the origin or source of most slabbing is in lamination or weaknesses developed in the clay structure during the making. These weaknesses exhibit themselves during the burning and in many cases can be remedied by careful burning.

Also, slabbing can be *caused* by improper burning. Blowing, slabbing and blistering can be done in the following *four distinct periods* of the burning, or wherever gas is generated:

1. Watersmoking;
2. Oxidation period;
3. Period where sulphur gases are dispelled, and
4. Incipient vitrification period.

If a manufacturer is having trouble with slabbing in burning he should equip his plant with pyrometers and draft gauges. If his plant is small and he does not feel he can afford a complete equipment he should obtain one draft gauge and a portable pyrometer with two elements, one for the top and one for the bottom of the kiln.

SLABBING DURING WATERSMOKING

In *Brick and Clay Record* of November 20, 1917, there appeared an anonymous article on slabbing. It was very sensibly written and took up one phase of slabbing and its corrections with merit. In this article the author pointed out that his slabbing did not develop during the watersmoking. Watersmoking slabbing or a too sudden rise in temperature during this period usually blows the ware and shatters the pieces. There is a point to be considered here, and that is that there is considerable lag between the bottom and top temperatures.

In a down draft kiln the moisture settles toward the bottom of the kiln and by holding at 220 degrees Fahr. the bottom of the kiln is not free from moisture. It is the practice often to hold here and then advance quite rapidly, the result being that the bottom temperatures advance thru the watersmoking period very rapidly causing steam to be generated; and if the ware is closely bonded slabbing results.

This is shown by the time temperature curves which I am sending with this article. No. 1 shows this condition. The grogged body used here helps open up the structure and allows faster watersmoking.

OVERCOMING SLABBING IN THE OXIDATION PERIOD

Where there is considerable carbon in the clay slabbing may occur here. If there are laminated areas or concealed blisters and the ware is tight and finely ground, fast oxidation or the freeing of gas rapidly will cause blowing and slabbing. With a pyrometer as a guide it is advisable to place thick trials in the bottom of the kiln and draw these at intervals in order to find the lowest safe oxidizing temperature. Here again grog helps as it opens up the structure of the ware and allows the gases to pass out without rupturing the ware.

PERIOD OF SULPHUR GAS EXPULSION

Clays which have a considerable quantity of iron in the form of pyrites, develops gas at an extremely dangerous time. This gas is expelled at a period where most clay bodies are tightening up. Here again grog as a more refractory character helps.

INCIPIENT VITRIFICATION

This period of tightening of the body sometimes gives trouble but troubles caused here are always traceable to laminations and should be cured at the source.

In summarizing, the use of grog should be emphasized especially in the present period of fuel scarcity. Grog helps eliminate lamination, it utilizes a waste product, and it opens up the structure of the body and allows more rapid burning, which means less coal. (Coal is nearly directly proportional to the length of burn.)

METHODS OF CURE

The places to look to in order to stop slabbing are:

1. Proper filling of press;
2. Proper die construction;
3. Sufficient time in watersmoking zone;
4. Sufficient time in oxidizing zone; and
5. More time during expulsion of sulphur gases.

In order to intelligently investigate these different periods a pyrometer and draft gauge are essential. *In order to prevent repetitions and unequal burning fixed burning schedules are necessary.*

If the manufacturer has no one in his employ to proper-

Slabbing, According to Contributors of this Symposium, is Not Only Due to Faulty Watersmoking but is Also Caused in the Oxidation and Vitrification Stages of the Burn.

ly do this work he should hire some competent ceramic engineer to advise him in the same way he would employ an attorney if in legal difficulties.

We have passed the day when modern clay manufacturers try to solve manufacturing problems by "Main Strength and Awkwardness."

INCOMPLETE OXIDATION SOURCE OF EVIL

B. T. Sweely, winner of "Brick and Clay Record's" Two Ceramic Students' Essay Contests, is author of the following able letter:

I HAVE READ the article entitled "Vitrification and Watersmoking Slabbing in Drain Tile and Sewer Pipe," and the symposium of opinions submitted by different manufacturers, and published in the January 1 issue, with a great deal of interest. Further, it was considerable of a surprise to me that I did not see advanced in any of the criticisms offered, an explanation which fitted in with my own pet theory of the cause of the particular type of slabbing which the author of the above mentioned excellent article designated as "vitrification slabbing."

Granting the author's premise that potential slabs are already pressed in the ware in the form of laminations and that they are loosened up some time after vitrification sets in, I believe there is another explanation which I have not as yet seen offered to account for this phenomenum.

ALL SLABBING NOT DUE TO FAULTY WATERSMOKING

Neither can I fully agree with Mr. Karzen in his very constructive criticism of this article, in which he states that all slabbing is due to faulty watersmoking, and that these vitrification slabs which become visible in the latter part of the burn are due to incipient scaling or blowing during the watersmoking stage. Slabs formed during watersmoking are caused by steam being generated within the body of the pipe faster than it can escape thru the pores of the clay. It is held under a constantly increasing pressure as the temperature of the kiln rises, until the force exerted by the imprisoned steam causes a failure of the surrounding clay walls.

The enormous velocity created by the drop in pressure of the steam in escaping thru a sudden opening such as must occur upon the failure of the clay as mentioned above can not but have a disrupting effect upon the walls of enclosed space, especially in proximity to the opening, with the result that these slabs are often blown some little distance from the pipe of which they were originally a part.

Under these conditions, the writer does not see how it is possible for the slabs to be left clinging to the pipe unless the clay is in a viscous sticky condition, which at this stage it decidedly is not; in fact it is quite contrary. That a very large per cent. of slabbing is due to faulty watersmoking, I think all will admit, but the slabs described by the aforementioned author are, I believe, due to another cause.

INCOMPLETE OXIDATION SOURCE OF EVIL

It has always seemed to me that this type of slabbing may be directly attributed to an old acquaintance of the clayworking fraternity—incomplete oxidation. It is well known that if a piece of clay ware containing a large amount of carbonaceous material be not properly oxidized, bloating and swelling will result when vitrification sets in, due to the formation of an impervious skin on the outside of the ware, thru which the gases generated by the combustion of the still unoxidized carbon within the body, can not penetrate. In fact, it is not even necessary to have a highly carbonaceous clay. I doubt if there are many clays in use in the Middle West, which do not require a rather careful treatment during the oxidation period to prevent the above results.

What then is to hinder the same action taking place in a pipe in which there are lamination planes of weakness? If oxidation is not complete before vitrification sets in, it has always seemed entirely possible to the writer's mind that slabs could be loosened from a pipe along the plane of a lamination by the gases evolved from the unoxidized portion, and once loosened, the shrinkage effects and viscosity of the ware at this temperature would readily account for their curling up and away from the pipe as the author of the article suggests. In fact it has always seemed to me that these slabs are simply the well-known blisters of incomplete oxidation, formed on the outside of the ware, the resulting "slab" being merely the "peeling out" of the lamina which formed the outside of the blister.

ADDITION OF GROG OBVIOUS REMEDY

The addition of grog would of course tend to alleviate this trouble, since it would open up the clay body and more readily permit of the penetration of oxygen and escape of the $C.O._2$ gases. It would therefore not only accelerate the oxidation but would also delay the formation of a vitrified and impervious layer on the outside of the ware, thru which the entrapped gases could not escape.

In fact, grog is the obvious remedy for this trouble, for with certain close bodied clays it is practically impossible to secure complete oxidation without some such expedient, and as Mr. Karzen suggests it also decreases the liability to blowing during the watersmoking period for the same reason, i. e., opening up and rendering more porous the body of the ware in the dry state.

The picture on page 41 of the January 1 issue of *Brick and Clay Record* is a good illustration of the condition which the writer has in mind, except that in this case the lamina has not entirely separated from the pipe on any one side with the resultant curled up effect as is often seen. I think any one must admit after even a casual glance at this picture, that this "slab" or "case of blowing" was originally a blister which it would be impossible to form with the ware in any but a viscous state. Grog and more care in oxidation will greatly reduce this trouble. In fact, by a judicious use of the former and proper control of the latter, this loss should be entirely eliminated.

* * *

Architectural Beauty of Atlantic Terra Cotta

The Fifth Avenue Association has awarded its 1917 gold medal to the Postal Life Building, at Forty-third street and Fifth avenue, New York, N. Y., as this year's best example of new construction in the Fifth avenue district. The building thus honored is faced almost entirely with Atlantic terra cotta. It is a fact of interest to architects and owners that many of the most distinctive new designs in the Fifth avenue district have been executed in this artistic building material, which is the product of the Atlantic Terra Cotta Co., 1170 Broadway, New York.

A BETTER BRICK— *and a* BY-PRODUCT

This is One of the Best Articles that We Have Published from the Pen of Mr. Greenwood. It not Only Points Out the Manner In Which a Paving Brick Trouble was Eliminated But it Shows How The Solution Opened the Way to the Manufacture of a Profitable By-Product

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company,
Uniontown, Pa.

"THIS IS AN UNEXPECTED PLEASURE," said Moore, the superintendent, as the auto containing Baldwin, Sellers, and the General Manager, came to a stop with a sound like the stripping of all the gears of a pug-mill.

"Whoa, Flint!" cried the driver of a passing cart as the mule shied at the machine.

"Where on earth did you get that name for the beast, Mr. Moore?" asked the G. M., stepping out and shaking hands with the superintendent.

"That's easy," interjected Baldwin. "It's because he is so refractory."

"Wrong," rejoined Moore, "it's because he was never known to run at any temperature."

"John, we are after information," began the G. M. "Mr. Baldwin here has donned his war paint," with a nod at the sales manager's hands, still bearing traces of his experiments with green paint. "He wants to know why it is that after our paving blocks have been in service a few weeks, small craters or scales appear, marring the appearance of the pavement. We are all concerned in finding out why this is so."

"Rolled too heavy," suggested Moore, promptly.

"If that were the case, why would not the craters appear

"He Wants to Know Why it is That After Our Paving Blocks Have Been in Service a Few Weeks, Small Craters or Scales Appear, Marring the Appearance of the Pavement. We are All Concerned in Finding Out Why this is So."

while they were being rolled instead of a few weeks later?" queried Baldwin.

"Then why do they stand such a cracking good rattler test? Why should they stand up in the rattler and not show up well in the road?" countered Moore. "And anyhow, if looks determine the quality, I think ours hold their own with the other fellow's."

"Here are the Distinct Somewhat Circular Pits, Corresponding to those Which Appear After the First Rough Usage in the Road."

"That reminds me of a pretty good remark made by Mr. Baldwin," said Sellers. "In response to some inquiry, he spoke favorably concerning the blocks made by one of our neighbors. 'That's funny,' the man answered; 'those fellows say your blocks are no good at all! Why do you praise theirs?' Mr. Baldwin dryly explained, 'Most likely we're both entirely wrong!' "

"I certainly should hope they were both wrong," said Moore. "But I sure was tickled recently at the ad of one of our other paving block friends. They have a peculiar form of block on which they claim to have a patent. So to make people think they were making a hit they warned intending purchasers against unscrupulous manufacturers who infringed their patent rights to deceive the public! But now you are all here, suppose we take a walk thru the plant. It will do the sales department good really to know something about the making of brick." With this shot he led the way into the machine room while Baldwin tried in vain to think of a suitable retort.

THE TOLL OF WASTE AND SOURCE OF TROUBLE

At the brick machine they stood, watching the column come out of the machine and the automatic cutter rythmically chopping it into blocks. These the conveyor belt was separating and carrying to the repress. With each cut there was a waste slab from about an inch to one and a half inches in thickness. These were disregarded by the man feeding the repress, and they fell off the end of the conveyor belt onto another belt which carried them back to the combined pugmill and auger machine.

Suddenly Baldwin gave vent to an excited exclamation, gesticulating and pointing at the waste slabs.

"Mr. Baldwin is like a chicken. He crows over his achievements," laughed Sellers.

"Maybe I'm like my own hens," confessed Baldwin. "When they cackle, I think they have surely been laying. Instead, I find they have been lying."

"That reminds me of the hen that found the porcelain egg in her nest. Perhaps porce-laid egg would be better. Anyway, she thought next thing she would be a bricklayer. But now what is the idea you have incubated?"

"See those slabs? See them going right back to the pugmill and dropping in just in front of the auger? What chance have they to be stirred up and bonded with the column? None. They are broken up into bits. When one of the chunks works out to the surface of the column as it comes thru the die, it simply gets flattened out. This would account for the more or less circular bits which so readily break away from the blocks soon after they are put into service."

"That may happen," acknowledged Moore, thoughtfully. "Here, Bob," turning to the foreman of the machine gang, "let's stop these slabs from going back to the pugmill and send them back to the pan instead."

"Done," said Bob, throwing out a clutch and stopping the belt which caught the waste slabs from the conveyor belt. "We can just start wheeling them back until we can get the belt re-located so that it will discharge into the pan instead of into the mill."

A POSSIBLE BY-PRODUCT

"Just one minute," exclaimed Sellers. "You know those splits we were arguing about this morning for cupolas? If they can really be made from paving clay, why not use these waste slabs for this purpose?"

"You will find they are not of uniform thickness," explained Moore. "No mason could lay up a wall with such splits."

"They would not need to be uniform for re-enforcing a cupola lining such as we were discussing. Don't you think they might work out all right?"

"Only one way to see, and that is to try them out," said the G. M., rescuing a few and piling them up so as to see the extent of the variations. "Suppose we set aside a thousand or so, burn them in some part of a kiln where they will not be vitrified, and when they are out of the kiln we can barrel up a quantity for trial. This way, we can find if they will stand up in service, and also if the variations in thickness are objectionable."

"All right, we'll try it. Perhaps the egg we are hatching may prove to have a double yolk in it. Maybe we can improve the quality of the paving blocks and find a useful by-product at the same time," said Moore.

"Now I have one other suggestion," volunteered Baldwin. "We know to begin with that these blocks stand a good rattler test. And if they stand in the rattler, pounded as they are on all sides, they will surely stand in the road with but one surface exposed. Now suppose we run a test for only fifteen minutes, examine the brick for pitting, and then run the remainder of the test. If there are any loose pieces they should come loose soon after the beginning of the test."

"Why stop and examine them after the first quarter of an hour? If the craters are there after the first few minutes, will they not still be there after an hour? Do you think you can first rattle holes in the blocks and then rattle them out again?" asked Sellers, incredulously.

"If a man has a field with tree stumps in it, and he proceeds to blast out the stumps, will not the holes from which the stumps were extracted be plainly visible soon after the work is done? Will they be equally evident after the field has been ploughed and harrowed a few times? Well, that's the way I am looking at the problem," explained Baldwin.

"Here goes then," said Moore, having chosen ten samples at random. "We will soon see whether or not there is anything in Mr. Baldwin's stump speech."

After 450 revolutions they opened the rattler and inspected the blocks.

"Here you are, all right," confessed Sellers, laying aside three of the blocks. "Here are the distinct somewhat circular pits, corresponding to the first rough usage in the road."

"Let's run the remainder of the test," said the G. M. "Just a minute, tho. Let's weigh the blocks now and compare the losses during the first quarter of an hour with the losses during the remaining three quarters."

STARTLING DISCOVERY

This rite having been performed, they rattled the entire set for 1,350 additional revolutions. Then they weighed them again. The loss in the first fifteen minutes was found to be greater than that during the forty-five minutes following.

"Looks as tho there was something in your argument, Mr. Baldwin," was the verdict of the G. M. "Will the machine gang foreman see that those waste splits are set aside and run thru the kilns?"

"I'll look after it myself," said Moore. "Bob is a good fellow all right, only he is so absent-minded at times that he forgets one minute what he says the next."

A couple of months later, Sellers walked briskly into the office of the General Manager, holding a letter in his hand.

"Here is the first result of our paving split experiment," he said. "We shipped these people a barrel of the splits as soon as they came from the kiln, and we have just received this letter from them stating that they have given as good service as the high grade splits we were accustomed to furnish for this purpose. They ask us to ship them a car load."

"Taken all together, that was a pretty illuminating trip, wasn't it? When can we furnish them?"

Sellers made a despairing gesture. "Goodness knows," he answered. "What with car shortage and embargoes, we never know now when we can furnish anything."

"That reminds me of my boy's frequent interrogations. Yesterday he wanted to know what 'sic transit' meant. I told him any kind of transportation was a 'sic transit' these days."

* * *

DEATH TAKES GEORGE B. DRENNAN

George B. Drennan, vice-president of the J. D. Fate Co., Plymouth, Ohio, passed away on Wednesday evening, February 6.

Mr. Drennan had been in very bad health for a number of months but while he had appeared to be better two or three weeks ago, he was taken suddenly worse on Tuesday and died early Wednesday evening at the home of his sister in Galion, Ohio, where he had gone for a short visit. While his death is not a great surprise to those familiar with his condition, yet the news of it comes as a great shock to his friends and associates.

George B. Drennan was educated in the public schools of Plymouth. At the age of twelve years he entered the office of the "Plymouth Advertiser" and learned the printer's trade, remaining there for three or four years. He later engaged in farming, following that pursuit until 1889. In 1890 he became connected with E. M. Freese in the manufacture of brick and tile machinery. After this partnership was dissolved, he became identified with the J. D. Fate Co., acting as secretary and treasurer and later as vice-president of the company.

Mr. Drennan was prominent among the business men of Plymouth, having been closely identified with the history of the city as a representative of its most important industry for about thirty-five years. He was one of the most widely known clay machinery men in this country and Canada and his name is known in the industry everywhere. He was a first-class salesman; as a talker he had few equals, and he knew how to meet men.

Mr. Drennan has served on a number of important committees of the National Brick Manufacturers' Association, has travelled extensively and was very familiar with the clay plants of this country. When a representative of the J. D. Fate Co. was wanted anywhere, it was Mr. Drennan who went, as he was well liked in the trade and was a master of his business.

Mr. Drennan was married in 1879 to Miss Mary Brittain of Delaware, Ohio. He served as mayor of Plymouth, filling the office for two terms and has also served as a member of the city council.

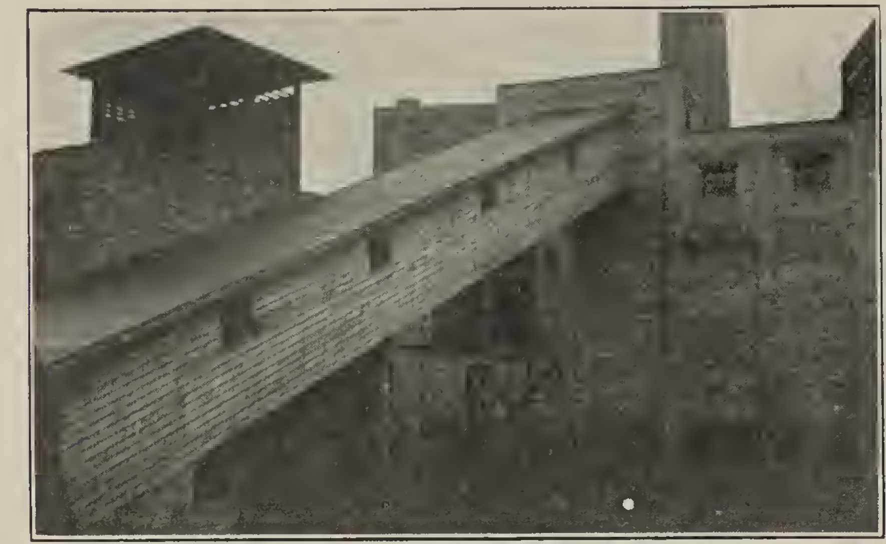
GEORGE B. DRENNAN.

The clay products industry as a whole, shares with his family the sorrow of his departure and extends its heartfelt sympathy.

COAL HANDLING COSTS CUT

Some Efficient Methods for the Distribution of Coal from the Car in Which it is Received to the Furnace Where it is Burned Are Here Described in Detail

HOW TO DISPOSE of the huge coal supply received at clay plants, at the lowest possible cost, is a big problem. According to figures compiled by the United States Geological Survey for the year 1915, on the quantity of coal used by the various industries of the United States, the clay products industry consumed over 8,500,000 tons and was the third largest user of this fuel. Men in the clay products industry know that they are large consumers of coal (especially at the present time, when it is hardly available) and would welcome any new methods which would help reduce the quantity required or the cost of handling it.



Showing Part of the Belt Conveyor Casing on the Clearfield Sewer Pipe Co.'s Plant and the Brick Storage Bin which has a Capacity for Six to Seven Carloads of Coal.

The latter has made itself evident, as is manifested on some plants where very economical and scientific methods of handling the fuel supply have recently been installed. It is a puzzle to try to understand why many plants are still satisfied with disposing of their coal in the old manner used when plenty of coal was obtainable, and the supply and cost of labor an easy problem to contend with. Hundreds of plants still have their men shovel the coal over the side of a car onto a pile from which small carts or wheelbarrows get the fuel and distribute it among the kilns. In some cases this may be the only practical method because of poor yard arrangement or some similar reason, yet this is not the general rule.

It is the purpose of this article to point out two or three systems of coal disposal which have been in use on several plants and with good success.

At the Purington Paving Brick Co.'s plant at Galesburg, Ill., where an immense quantity of fuel is used, the coal is supplied to the kilns as follows: A clam-shell bucket loads the fuel from the coal car into a small car which runs on a track elevated to about three feet above the floor of the firing pit and located between the kilns. The car is then pushed along the track to the places in need of coal, dumped and brought back again to be refilled. A track of this kind is built alongside of each kiln. When one of these rows has been supplied with fuel, the car is attached to the clam-shell bucket by means of chains and lifted over to the next track, which supplies another kiln with coal. By following this method the kilns can be supplied with fuel in a comparatively short time.

VERY GOOD SYSTEM IN USE AT CLEARFIELD

One of the best systems of coal disposal of which we have knowledge is that in use as the Clearfield (Pa.) Sewer Pipe Co.'s plant. Here the coal is dumped from the bottom of the coal cars into a large steel hopper. Six steel rails are placed across the hopper about eight inches apart so as to prevent large lumps from falling in with great force and either damaging or clogging up the mouth of the chute. The coal is transferred on a belt by means of a shoveling device consisting of a steel plate, similar in form to a shovel, which moves back and forth, being operated by an eccentric which is connected to the belt pulley. Each time it moves forward it pushes coal in a proper quantity on the belt. The belt itself is twenty-four inches wide, six ply, and made of rubber.

The conveyor is about 110 ft. long and is inclined at an angle of about twenty-five degrees. The belt is 230 ft. long, the extra length of the belt being taken up by a heavy pulley to keep it taut. The coal when it reaches the top of the conveyor falls off the belt on to a chute, which may be

The Doorway on the Extreme Left is the Entrance to the Boiler Room and the Light Colored Brick Structure Immediately Adjoining it to the Right is the Storage Bin.

pointed in different parts of the storage bin according to requirements.

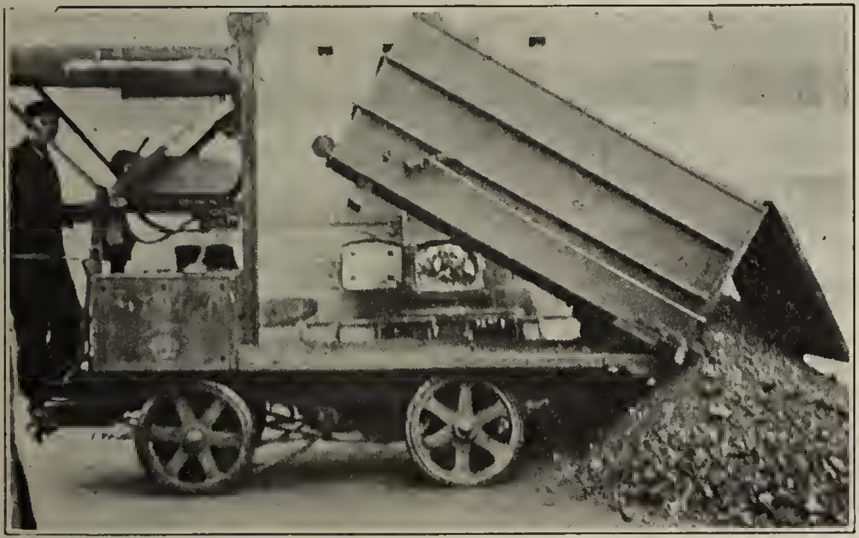
The power requirements for this conveyor do not amount to very much since it can be operated by a ten horsepower electric motor. The material required to build the entire elevator amounted to about $700 and the total cost of materials and installation amounted to only $2,500. The conveyor was built in November, 1916, and to date, not one cent has been spent in repairs and the belt is still in as good condition as it was the day it was put on.

With this equipment and system of unloading, one man can empty one car of coal in two to three hours without exerting himself strenuously. The advantages of a good system such as this are brought out by noting the following experience which occurred on this plant. A few months ago more cars of coal were received at the plant than could be stored in the storage bins. The coal had to be disposed of immediately to prevent demurrage charges, so it was decided to place it in a pile alongside the railroad spur, as is shown in one of the accompanying views. However, instead of using laborers to throw the coal over the side of the car onto the pile, as would customarily be done, this company found it a great saving to convey the coal into the storage bins and then load it from the storage bins into dump carts which brought the coal over and dumped it upon the pile shown.

STORAGE BIN HAS UNUSUAL FEATURE

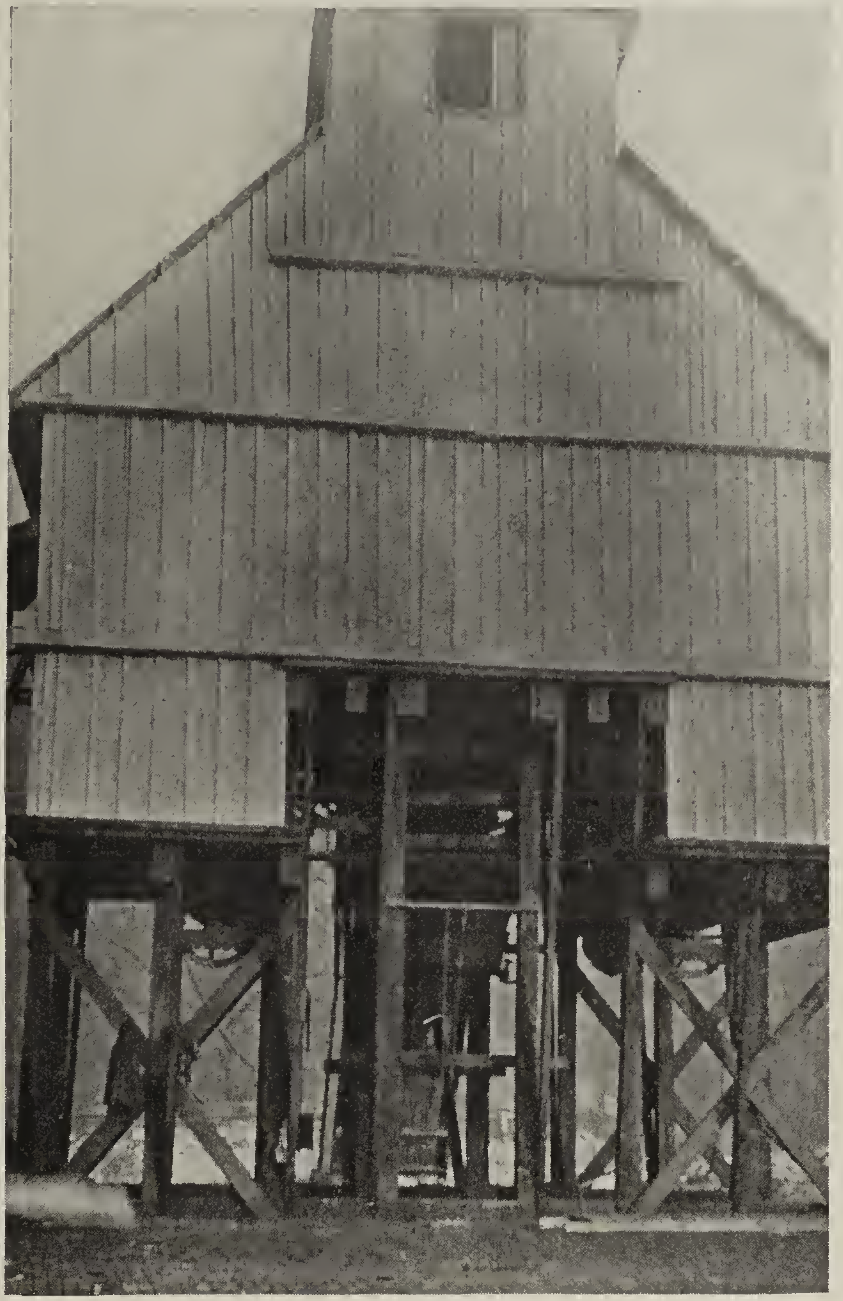
The storage bin at this plant is a large brick structure holding about six or seven cars of coal. There are five stalls at the bottom of the bin and a chute in each stall, from which the carts which enter the stall become loaded with fuel. By pulling a lever a man can load his cart in but a few seconds and drive off to the point of distribution. There is one feature about the construction and arrangement of this structure that is unusual but a very good idea. The structure was built against the building containing the boilers and the lower ten feet of the wall between the boiler room and the storage bin was taken out, thus allowing the coal from the storage to fall in a pile, in close proximity to the boiler furnaces. This obviates the necessity of rehandling the coal for boiler purposes, which of course is a great advantage.

Another storage tipple of somewhat different type is that used at the Standard Refractories Co.'s plant which is pictured in the illustration in the next column. This coal tipple is located at one end of the yard and holds about 150 tons of coal. It is filled by means of a bucket conveyor which has been found to give very good service.



This Electric Truck has a Capacity of 3,200 to 3,400 Pounds of Coal and Supplies the Fuel Needs for Seventeen Thirty-Eight Foot Silica Brick Kilns.

A noteworthy feature of the coal distribution system on this plant is the use of an electric truck to supply the coal for its seventeen large kilns. The truck is of the type manufactured by the Automatic Transportation Co., and has a capacity of from 3,200 to 3,400 lbs. of coal per load. The yard is completely paved with brick, which makes this sort of truck adaptable, and very easy to use. It takes but a few minutes to run over to the tipple, load up by pulling a lever, and then run over to the kiln in need of fuel and dump. This system has been found very economical compared with former methods when horse and cart were used.



This Type of Storage Bin is in Use on the Standard Refractories Co.'s Plant at Claysburg, Pa. It has a Capacity for about One Hundred and Fifty Tons of Coal.

LIGHT AUTO TRUCK USED FOR DISTRIBUTING COAL

A somewhat different method than the above for furnishing the kilns with fuel is that used on a fireproofing plant in the East. At this plant a light truck supplies all of the fuel required for the forty-one kilns on the plant. The average haul is equivalent to about six hundred feet one way, and the yard is unpaved. By means of this truck one hundred tons of coal are distributed to the various kilns on the plant by one man in ten hours. Formerly three mule carts were required to do the equivalent amount of work. A plan which is expected to be a success and which will be tried out in the near future is that of filling trailers with kiln ashes and then drawing them off by means of the truck to the dump pile where they may be emptied at any convenient time.

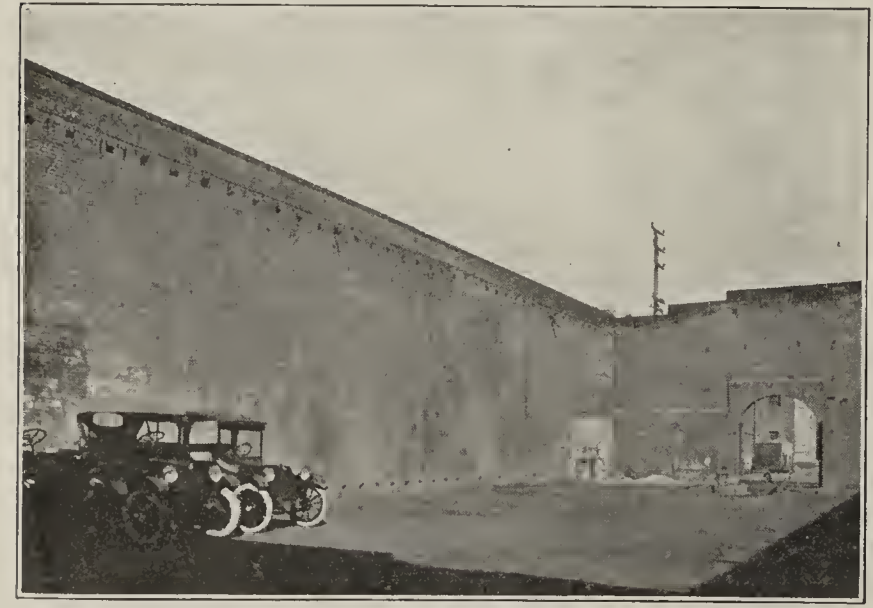
There is no doubt in the minds of most of us that a good systematic means of disposing of the fuel from the car in which it is received to the place where it is fired, is lacking on most plants. For some reason or other, as important a point as it is, this phase of clay plant operation has not received its full share of study. It was with the hope of aiding those who desire to improve their methods in this direction that *Brick and Clay Record* has prepared this article on some good systems in use.

Supplying Forty-One Kilns with One Hundred Tons of Coal in Ten Hours with an Average Haul of Six Hundred Feet is the Work Done by This Light Truck Each Day.

* * *

A Remarkable Record

The accompanying illustration shows a warehouse at Seventh and Alameda streets, Los Angeles, Cal., which was completely gutted by fire three times. The long side of wall shown in the picture separates two sections of the same building. The first fire, we are informed by William Mead, owner of the warehouse, occurred in November, 1904, on the opposite side of the wall to that shown, and this fire burned for three weeks. The other two fires were in the section of the building shown in the picture—one fire in August, 1913, and the other in December, 1914. Mr. Mead says he made no claim on the insurance company for damage to the walls, as the only damage to the brick is a slight discoloration from smoke and flame.



Three Times the Brick Wall Shown Above Has Withstood the Ravages of Fire, Protecting the Adjoining Properties from the Blaze that. Confined. Played Such Havoc: and Not Once has a Claim for insurance on the Wall Been Made.

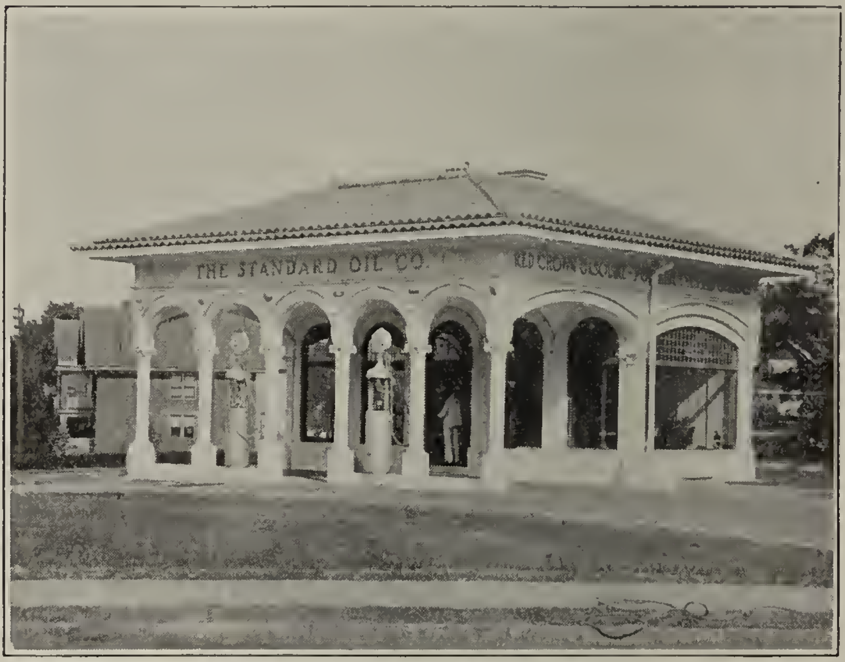
This is a splendid illustration of the advantage of building with brick, and is being used on an advertising card distributed by the Simons Brick Co., manufacturers of building and face brick, Los Angeles.

* * *

Harmonizing Garages with Surroundings

The accompanying photograph of the Standard Oil Service Station at Cincinnati, Ohio, is sufficient evidence that with tasteful and dignified architectural treatment, commercial buildings can be made to harmonize in communities where homes predominate. The handsome terra cotta station shown is an ornament to its neighborhood, and lends much beauty to the pleasant residential section in which it is located.

The material used for this building was supplied by the Atlantic Terra Cotta Company of New York and is of white matt glazed terra cotta with the circular panels in polychrome effect. The panels symbolize the use of gasoline such as automobiles, motor boats, and areoplanes. The burned clay tile roof, very beautifully woven into the color scheme, lends much to the attractiveness of the station.



This Structure of Architectural Beauty, Altho Serving a Commercial Purpose, Lends Attraction to the Residential Section in Which it is Located.

* * *

Cincinnati Brick Club Appoints Committees

President A. W. Riggs, of the Brick Club of the Cincinnati Chamber of Commerce, has appointed the following standing committees for the year 1918.

For the Traffic Committee the following were appointed: Walter Pursell, chairman, of Pursell-Grand Co.; F. Lawson Moores, of Moores-Coney Co.; J. A. Peters, of the Builders' Material Co.; and C. E. McCammon, of L. H. McCammon Bros.

The Trade Rules Committee will be composed of the same men as the above committee only F. Lawson Moores will act as chairman. The following men will make up the Entertainment Committee: Chairman, Jno. M. Stoner, of the Cincinnati Clay Products and Supply Co.; Ed Pick, of the Moores-Coney Co.; and D. C. Shorey, of the D. C. Shorey Brick Co.

The Advertising Committee is to consist of E. F. Grand, chairman, of the Pursell-Grand Co.; L. G. Wilde, of the Cincinnati Clay Products and Supply Co.; and W. J. Pugh, Jr., of the Builders' Material Co.

The BUSINESS *of the* INDUSTRY

It is to Turn the Demand for Building, Tiling, and Paving Materials to Clay Products by Forceful Publicity Campaigns

By C. B. Platt

Read at the Tenth Annual Meeting of the Northwestern Clay Association, Minneapolis, January 17 and 18

THE BUSINESS OF THE INDUSTRY—did you ever think about it in this way? The clay products industry is presumably supplying a great amount of the materials used in the industry of building, which ranks with the country's *greatest* industries.

The clay products industry is or should be supplying practically all of the materials used in the great drainage projects of the country, which are so great that in one single state, but a few years back, the work under way and projected called for a greater expenditure than the great sum required to construct the Panama Canal.

The clay products industry produces a commodity which beyond question possesses qualities which class it as foremost in the ranks of the best materials for surfacing the permanent highways of the country, a work which is bound to be done and which will exceed in cost that of the construction of our useful railway systems.

These are the three great divisions of industry and progress toward which we must turn our attention and from which we must secure our business.

CLAY PRODUCTS STILL HOLD CHIMNEY MARKET

In the way of a partial analysis of the single division of building, let us consider for a moment the branch of this industry which is classified as small homes. Clay products go into most of them to the extent only of the part for which the ingenuity of man has as yet found no substitute —the chimney. This is so notwithstanding the fact that no better material could be imagined for the walls of these countless structures than clay building tile, and there is no more really economical material, all things considered. We, as manufacturers, know these things and we are much inclined to wonder why the general public does not.

The ordinary citizen, and we should perhaps include the clay products manufacturer in this class, has for some time considered the farmstead as a collection of very unimportant looking structures, and unless the citizen happens to be a lumber dealer he is more than apt to think of the farm as a very unimportant market for building materials. This is a decided error. In just one of our western states farm building improvements total a $42,000,000 expenditure annually. We can appreciate more clearly what this sum means when we get it divided into sums with which we are more accustomed to deal.

This annual expenditure means that the farmers in the state referred to are spending $100,000 on buildings each day, or $2,500 every fifteen minutes. It is closely estimated that 50 per cent. of this amount is spent in up-keep. Are the farmers spending this money so well that there is no chance to show them how they could save a few million a year on up-keep of buildings within the confines of a single state? Does this not look like a market worthy of attention? Is there anything better to offer them than permanent construction obtained by the use of the hollow clay tile?

It hasn't been the custom for clay products manufacturers to preach much on the subject of woeful waste, carelessness and poor construction because they have had a sort of respect for that old "glass house" saying, but things are changing somewhat and a respectable number of our clan have a right to preach at least a short sermon on economic methods in doing business and in living.

SAVING WASTE OFFERS GREAT OPPORTUNITY

Well, supposing we get away from ourselves again and criticise the farmer. I won't attempt to quote grain prices nor to name half of the present day needs for food, food which comes from the farm. There isn't a man of mature years in this room who hasn't seen the sky reddened at night in most any direction he might look, from the burning of straw stacks. Today, in the state of Iowa, oats straw is selling for $12 to $14 per ton and we pass in a day's ride enough feed going practically to waste in the great winter corn fields to feed all the cattle raised in a state, if this feed were partially conserved by converting it into silage.

How many bushels of $1.50 corn have gone this year to feed the worthless rats just because the corn has been stored in tumble-down slat corn-cribs, or a much more expensive structure built of lumber and politely styled a "crib"? I speak of these things not so much in criticism as to show plainly that we are in the midst of a very great possible demand for clay products. *To turn that demand to clay products is the business of the industry.* How about this business—is it headed pell mell for the clay products plants, grimly determined not to be stopped? Is there any demand that the government take over the clay products plants in order that the suffering public can get more of this much sought material?

Everybody in this business knows that they are perfectly safe; that they can spend a quiet life in this business if they want to and the world will wag right along. In other words, we all know that the cream and most of the milk of this business is headed straight for Cementville and Lumbertown. Is it going to be possible for one, two, six, or ten of you manufacturers of clay products, all working on your own hook, to even undertake to turn this business thru your clay products plants?

SECRETARY NOT A MAGICIAN

I am much inclined to say no. That is the business of your industry as a whole. I am assuming that you will all admit the necessity for organization and a serious consideration of it to the extent of maintaining an office under the charge of a paid secretary, so we will start off with the office and the man as established facts. Now, gentlemen, what have you done? What are you going to do with the man and the office? Have you established a miracle shop? Is this man going to do some remarkable stunts with a magic wand? Are you expecting to see everything straighten out, see your enemy become your friend, see the roads paved with brick, the fields drained with clay tile, the farm buildings built of hollow tile and the cozy homes also, without serious thought and self-analysis on your part, and with comparatively little expense? No, of course not, but seriously—have you given this matter of organization real serious thought?

I have no desire to burden you with statistics (which always bound from the ear into restful and uncrowded space) with the idea of convincing you that there is something wrong in the clay business—or has been. You all know that regardless of the fact that burned clay materials are the oldest manufactured objects of which there is record, and that regardless of the fact that there is a market of wonderful magnitude available for clay products, the clay industry as an industry and as an avenue for investment has proved a trap which has caught trusting thousands and held from them for all future time their wealth, or a great portion of it. On the other hand, you know that there have been examples of marked success and you know that such have come thru the organization of producing units to effect an efficient maintenance of rated capacity output on a large scale.

Why not continue the duplication of such successes? That is, of course, the selfish question, but there is a reason why it won't work out to the satisfaction of the selfish. Admitting the market possibilities, clay products are not even 50 per cent. positively essential in the wall construction requirements of what are known as permanent or fireproof structures, to say nothing of the class of building in which they are now seldom used. In other words, if clay products suddenly dropped out of the market, buildings would still be constructed, not so beautiful or so permanent of course, but they would spring up without any great difficulty or inconvenience. We must therefore admit that the presence of a surplus of this material not backed up with an insistent demand is going to result in a mighty cheap material for the builder and long continued failure for the clay products producer, regardless of maintained large capacities and modern equipments.

MUST ORGANIZE TO PREVENT TRADE WAR

The clay industry is fast growing to be an industry dominated by strong individual organizations of capital. Unless these organize into associations calculated to conduct the business of the industry so as to result in a desire on the part of the public to use clay products ahead of anything else, there will be a war in the trade which will be as ruthless as that now being carried on a little on this, and the other sides of Germany.

I haven't much to say in favor of the trade association which is supported by members who are at heart in favor of keeping all their little old musty trade secrets under their own hats. Such an association has to spend ninety-five per cent. of its efforts on the members themselves. When a clay products manufacturer enters a trade association he should *know* that he is not going to do anything to disturb the objects of the association; he should know that his associates are also honorable men and if he don't know it, he should think it. With members of this sort the organization is ready to set about doing the business of the industry. Allow me to say that the business of the industry is no small thing, that it constantly must grow; that the cost of doing it must always increase and that it must be recognized as one of the most important essentials of the individuals' organization.

I don't want to be considered as visional, when I say that the clay manufacturers constituting the Northwestern Clay Association, or those of any association of a general character in any active clay products manufacturing state, will one day look upon their big money spending associations as positively necessary cogs in their business machinery, and that they will not consider a working capital for their organizations which contemplates a minimum yearly expenditure under $25,000. Don't smile, gentlemen, and don't say "impossible" for it isn't impossible, nor is this sum or a much larger one a thing you should consider as an expense. The creation of a large working capital for associations can and should be accomplished without one penny's real cost to the members.

PRICE FIXING IS FOLLY

I want to say in this connection that my talk has nothing whatever to do with cost fixing and your actions within your associations should have nothing to do with such ideas. An arbitrary price level fixed by agreement and devoid of real basic reasons is as useless and fleeting as a frost in late May.

Every producer should make his own minimum price but there is a point in price regulation which I feel you will all agree is just and within the law. If you propose, thru the activities of your association to better the economic situation with the consumer of your products to the end that his investments be safe and permanent, you are justified in making him pay for his education. Not *more* than it costs but *just* what it costs. I want to be quite plain on this point. I want the manufacturer to feel that his membership in associations does not cost him a cent and I want him to realize that he has no moral right to limit his support by retaining for his own use that which he collects for the benefit of his industry's customers. So we will say that this fixed contribution, or collection, should not be added to the selling price until the individual's selling price has been determined by him by adding his per cent. of profit to the amount representing the totals of all other costs. The manufacturer is not even entitled to a per cent. profit for handling the amount he collects from the consumer and which the consumer pays for his own education or enlightenment.

In deciding upon this point and fixing the rate which is assessed upon the consumer, it is first necessary to determine how much money can be spent to the entire advantage of the public. This amount should not be less than $25,000 in any of the active clay products producing states. How shall it be determined what amount each producer will collect? Shall the assessment be so much per ton, per thousand pieces, or per cubic foot of kiln space? Any of these methods will serve the purpose but in all probabilities the most satisfactory method is that of kiln space. So much for the questions of support and publicity.

THROWING LIGHT INTO DARK PLACES

As to the other business of the industry, it is simply this; throwing light into dark places. How much of a certain commodity is ready for shipment? How short is the supply of another needed commodity? What is best for the individual producer to do? Shall he make the commodity that it is most convenient for him to make regardless of the supply, or shall he make something that is needed to satisfy the demand. These questions can be answered promptly thru the central office of the industry, if it has been supplied with the information thru proper stock reports. There would be no question about the right of decision on the part of the producer. He can always do as he pleases. He gets the information and uses his own judgment. If he uses poor judgment, there is no defined penalty, but one exists however and it hits the whole line, from the individual thru the industry to the public.

We have seen during the past few months that it is very difficulty to decide that there are any unnecessary industries and that the closing down of any industry so classed, works a bad effect right thru the whole fabric of general business. We are learning that there is no such thing as individual independence, and that co-operative competition must take the place of cut throat competition. We have learned that what is termed "price fixing" is the foolishness of business childhood. No law should be at all necessary to ward off such indiscretions. A price combination is entirely devoid of both value and stability.

There is always a just price level which exists in fact. The measure of demand really has nothing to do with it but it exists and changes as the average cost of production changes. If manufacturers could forget about price competition and make their selling prices by adding a reasonable per cent. of profit to actual total costs, price levels would automatically adjust themselves to a figure representing the average cost of production plus the right per cent. of profit.

Modern competition however is attended by few guiding cost systems and selling prices are a matter of speculation and come in high or low classes according to the pulse of demand. If the producer hasn't his finger on the pulse and feels that he has a competition which is not to be trusted, he is in a decidedly uncertain frame of mind and makes wild guesses which are helped along in their wildness by the shrewd tactics of the professional buyer.

OPEN PRICE PLAN IS REMEDY

The remedy for this difficulty is the open price system. This is, plainly speaking, publicity of what has previously supposed to be private affairs. It is real knowledge and not implied information. There appears to be no reason why the seller should not make his price, as actually made, public property, as the purchaser must know the price before he buys. It is assumed by the government that the money issued by it is entitled to buy as much in the hands of one purchaser as another, hence there is no protection of secrets of the buyers' special price. There is no reason why one manufacturer should not know what the other manufacturers are selling their ware for, since in the eyes of the law the buyer and the seller are both citizens possessing the same rights.

There is in fact no question as to the legality of the open price system and this question has been passed upon by the best of legal talent. It is not proper or lawful for A to say to B: "I will make this price if you will." A must do what he intends to do without reference to B. Acting under the open price system A simply becomes an honest law respecting citizen. He knows that it is worse than useless for him to report prices different than he has actually made and that it is far better to make a price openly and to stick to it, excepting that he finds that other free and open quotations are so far below that he must change his, than to make secret prices which become public property very promptly.

I think that the business of the industry is a thing of as much vital interest to the individual producer as is the market for his ware and that they are in fact inseparable and therefore I feel that when associations fail in their purpose it is because they have not been seriously enough considered and that they have not been supported under the proper system.

I am optimistic about the better attitude of the manufacturer of clay products. I think he is fast becoming alive to the fact that co-operative competition is essential, that it is entirely a fair proposition and within the law, and that it is to his benefit to do everything in his power to promote its growth and final establishment. Today is the day of co-operation. If we are not co-operating with our fellows we are living yesterday over again and our progress will be the progress of the long list of yesterdays.

* * *

Pepys Commends Brick as Fire Resister

A striking recommendation of brick as a fire-resisting building material is found in the famous diary of Samuel Pepys, the seventeenth century Englishman who kept a daily record of the events of his life for some ten years, including many wise and interesting, tho now curious, comments on the things he saw. Mr. Pepys, at the time he wrote the brick endorsement, was clerk of the Acts of the Navy. Later he sat as a member of parliament. He lived thru the great fire of London in 1666 and his diary contains many details of what he saw of its horrors and trials. The memory of this fire haunted him for many months and he frequently speaks of starting up in the night from dreams of conflagrations. He did not get over his agitation at the sight of a fire for years and the following entry in his diary, June 19, 1668, shows how great was his apprehension:

"Between two and three in the morning we were waked with the maids crying out, 'Fire, fire, in Market-lane!' So I rose and looked out and it was dreadful; and strange apprehensions in me and us all of being presently burnt. So we all rose; and my care presently was to secure my gold and plate and papers, and could quickly have done it, but I went forth to see where it was; and the whole town was presently in the streets; and I found it in a new-built house that stood alone in Minchin-lane, over against the Cloth-workers hall, which burnt furiously; the house not yet quite finished; *and the benefit of brick was well seen, for it burnt all inward and fell down within itself; so no fear of doing more hurt.*"

* * *

Large Attendance at Toronto Meeting

ON TUESDAY AFTERNOON, January 29, Thomas Kennedy, in the absence of President A. F. Greaves-Walker, who was delayed enroute due to a big snowstorm, called to order the sixteenth annual convention of the Canadian National Clay Products Association, which was held at the Prince George Hotel, Toronto, Canada, on January 29, 30 and 31. A very good attendance appeared at this meeting and an enthusiastic discussion followed each of the papers presented.

W. H. Scott, Drainage demonstrator of the Ontario Agricultural College, Guelph, in dealing with the drain tile situation in Ontario, emphasized the fact that tile was used in Western and Southern Ontario to a much greater extent than in any other part of the province. As yet tile was not used to the extent that it should be in the central and northern counties of Ontario. He stated that district representatives thruout the province had assured him that the demand for tile this year would be much greater than the supply, the lack of which manufacturers claim is due to the shortage of labor.

Following the reading of a paper on "The Workings of the Workmen's Compensation Act and How Assessments are Determined for the Different Classes," delivered by Samuel Price, chairman of the Workmen's Compensation Board of Ontario, a special committee was appointed to confer with the board with a view to ascertaining whether or not it would be possible to work out a system of merit rating. The committee will also obtain information as to the amount contributed by the employers grouped under the brick and tile section of the act and their percentage of payments towards the maintenance of the particular branch. Some of the employers thought the rating was too high and that they had had to pay much more money correspondingly than under the insurance liabilities system.

THOMAS KENNEDY, PRESIDENT.

Mr. Price stated that for the year 1917 the total amount contributed by employers towards the expenses of the administration was less than one and one-sixth per cent. of the amount of compensation awarded. The compensation awarded amounted approximately to $2,900,000, involving administrative expenses to the employers of only $33,000, the remainder of the expenses having been borne by the provinces.

The annual banquet, held on Wednesday evening, was a great success, there being over one hundred members and guests present. Joseph Russell, M. P. P., acted as toastmaster and among the outstanding features at this banquet were speeches by Rev. A. Logan Geggie and Miss Margaret Davidson.

A discussion on the question "What can be done to speed up tile production?" resulted in a motion for the executive to appoint a committee to interview the proper government authorities to see if some arrangements regarding distribution could not be obtained, whereby idle brick plants could be used to make tile, and supply it to districts where there is no local supply.

A list of the other papers read and discussed at this meeting was published in the January 15 issue of *Brick and Clay Record.*

The following executive committee was elected at this meeting:

Past President—A. F. Geaves-Walker, Baltimore, Md.

President — Thomas Kennedy, Swansea.

First Vice-president — William Burgess, Todmorden.

Second Vice-president—Ryland H. New, Hamilton.

Third Vice-president—G. Angus German, Toronto.

Secretary-Treasurer—Gordon C. Keith, Toronto.

Councillors—Chas. B. Lewis, Toronto; John S. McCannell, Milton; J. Edward Frid, Hamilton; Walter Clark, Corunna; N. T. Gagnon, Montreal; T. H. Graham, Inglewood; Andrew Dods, Mimico; and Chas. A. Millar, Toronto. M. F. Gibson heads the Technical Investigating Committe, and C. A. Millar, the Entertainment.

Ryland H. New, Second Vice-President. William Burgess, First Vice-President. Gordon C. Keith, Secretary-Treasurer.

NEWLY ELECTED OFFICERS OF THE CANADIAN NATIONAL CLAY PRODUCTS ASSOCIATION.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

This, the Fifteenth Installment Gives a Brief Survey of the General Features Common to the More Important Accessorial Rates and Service

By Sydney A. Hale

SYNOPSIS: In the narrow sense transportation means a carriage from one place to another. The rates for such service have been considered in their various aspects, with particular attention to their commodity, quantity, and territorial application. Modern American railroad service, however, covers vastly more than the mere conveyance of freight from one point to another. The accessorial features of this service are here briefly described.

THE AMERICAN RAILROAD RATE has always been recognized as covering the full service which the carrier gives—in furnishing the car, a proper place at which to load it, the conveyance of that loaded car and its terminal delivery. The charge for those various services is not in America broken up into its component parts and a charge imposed for each, as in England. The rate, which it requires shall be published, is a complete rate which includes not only the charge for the haul, but the charge for the use of the terminals at both ends of the line.—Associated Jobbers of Los Angeles v. A. T. & S. F. Ry. Co., 18 I. C. C., 310.

ACCESSORIAL RATES AND SERVICES

The legal conception of transportation, as embodied in the definition contained in the Act to Regulate Commerce, is much broader than the popular one which views transportation as a carriage from one place to another. In the narrow sense we have considered rates for transportation service as road-haul rates. Those rates and services separable from that class, but covered under the legal definition, may be termed accessorial. Differing as they do as between commodities and localities, the discussion here will be confined to a brief survey of the general features common to the more important of these rates and services.

Accessorial transportation service, for convenience, may be divided into general and special. Under the former classification comes switching, demurrage, track storage and terminal services and rates generally. Such services are more or less incidental to the initiation and completion of all road-haul traffic. The special services include transit services and the provisions governing the application of many rates which do not involve stoppage for any length of time, such as diversion and reconsignment.

ROAD-HAUL RATES

The publication of a specific rate or the application of a local or combination rate as a rule covers not only the actual service, but the necessary incidental terminal services such as setting out and picking up a car at point of origin and destination when the carriers rendering such accessorial services participate in the line-haul. When delivery is made on the rails of a carrier that does not so participate, the right of extra compensation over and above the road-haul rate has always been recognized. It is true, however, that is not always enforced. Competition between carriers for business leads to the publication of provisions for the absorption of many switching charges in whole or in part by the line-haul carriers.

The primary function of a carrier is transportation. The proper discharge of that service to the public requires that the carrier have an adequate supply of equipment to carry the traffic offered to it. To prevent the abuse of that equipment by the public after the transportation service proper has been completed, carriers are permitted to charge a penalty for the undue detention of their cars. This penalty is called demurrage. As a general proposition, consignors are allowed 48 hours in which to load and consignees a like period of time in which to unload their freight. For each day or fraction thereof, a demurrage or car service charge of so much per car per day is assessed. Track storage charges are similar in character, but, in the latter case, while the penalty is assessed on the car per day basis, it is for the use of the railroad track, not the car.

TRANSIT SERVICE OF SPECIAL VALUE TO SHIPPER

Many rates carry with them the privilege of milling-in-transit. In brief, this privilege involves the stoppage of the commodity at some point short of its ultimate destination, subjecting it to some manufacturing process and reshipping the treated article from the milling point to destination. The rate applicable is generally that in effect from the point of origin to destination, plus a charge for the service of permitting stoppage, extra switching and record keeping. Under this system, grain may be shipped from the wheat fields of Dakota, milled into flour at Minneapolis and the flour shipped to New York on a rate applying from the wheat producing station to the seaboard.

Under the same general practice, logs are sawed, lumber dressed, steel fabricated, stock fattened, cotton compressed. Rates are also published under which commodities are permitted to be assembled at a central point for concentration into carlots. Other rates of the same general character allow shippers to partially load or unload cars in transit upon the payment of the carload rate plus a stoppage charge. The various services and privileges that have grown up under the transit theory are many and furnish interesting examples

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†See preceding article in this series.

of how the American rate-structure has been fashioned to accommodate business and permit the diffusion of industries over a wide area.

Every business man who has sold his product upon the open spot market knows how demand and prices at one place may change over night. Many railroad rates permit the shipper to take advantage of these fluctuations by allowing diversion and reconsignment privileges. For example, a car of oranges may start from the grove at California consigned to Omaha; upon arrival there it is found that the market has declined; the car is reconsigned to Pittsburgh; before it arrives at St. Louis, a good market develops at Chicago and orders are given to divert the car to the latter city.

ACCESSORIAL RATES MUST BE REASONABLE

No general rule can be laid down as to accessorial rates and services. In some instances it has been held that certain accessorial services are included in the road-haul rate; in others, a separate charge has been permitted. Where the charge is made, the railroad is entitled to be reimbursed not only for the cost of the service rendered, but may claim a reasonable profit as well. Whether a charge should be absorbed or a service established are questions of fact. The principles governing other features of transportation are controlling. Accessorial rates and services must be just and reasonable and free from undue discrimination and prejudice.

Line haul tariffs do not, as a rule, attempt to cover the accessorial features. They usually carry a blanket clause that "freight transported under this tariff, in addition to rates and rules herein provided, will be subject to current rules and regulations of participating carriers, lawfully on file with the Interstate Commerce Commission, relating to car service or demurrage, car linings or grain doors, drayage or transfer charges, mileage and rentals for private cars, reconsignment, storage, switching, weighing and inspection, or other transit or terminal privileges or requirements which in any way increase or decrease the value of the service to the shipper. Freight received by the * * * Railroad Company for delivery at points on other lines, where thru rates are not in effect, will be subject when on other lines to such charges and rules and entitled to such privileges and allowances as in any way increase or decrease the value of the service to the shipper, which are provided for by the road performing said service or granting such privilege and lawfully on file with the Interstate Commerce Commission." Therefore, the shipper must familiarize himself, not only with the road-haul tariffs, but with switching, terminal and transit tariffs. As previously mentioned,* these may be determinative of the route actually selected and it is not difficult to imagine cases where, because of some special transit privilege or greater liberality in the absorption of terminal switching charges, a higher road-haul rate might mean an ultimate lower total transportation charge.

"BADGERS" FLOCK *to* MILWAUKEE

Spirit of Aggressiveness and Patriotism Displayed at Encouraging Convention of Wisconsin Manufacturers

WHILE THE MERCURY was hovering down in the vicinity of seventeen degrees below zero and the chill Lake Michigan winds were sweeping across the Cream City, twenty-nine delegates discussed the problems confronting the industry today, at the eighteenth annual convention of the Wisconsin Clay Manufacturers' Association, which was held at the Republican House, Milwaukee, on January 31 and February 1.

The program arranged by the association's aggressive secretary, Samuel Weidman, embraced a variety of subjects ranging from the effect of war-time conditions upon the manufacture of clay products in Wisconsin to a technical consideration of burning, drying, and other plant subjects. In addition to these subjects, handled by men qualified by years of experience in their respective fields to speak with authority, the program included a very enlightening talk by State Fuel Administrator Fitzgerald, and a plea for war time saving made by Mr. Morgan, a Milwaukee lawyer. These last two men made their addresses at the annual banquet held at the close of the first day's session.

Altho the convention was scheduled to open at ten o'clock on the morning of January 31, delayed train arrivals brought about by the extremely cold weather caused the postponement of the opening until one-thirty in the afternoon, at which time Oscar Zimbal, of Sheboygan, president, called the convention to order and asked for the annual report of the secretary. Mr. Weidman, in making his report, emphasized the necessity for an increase in the membership of the association. Altho there are said to be about seventy-two clay products plants in the Badger State, but twenty-four hold memberships in the state organization. It was proposed that before the meeting adjourned serious thought and deliberation should be given to the subject of appreciably increasing this number before the next annual convention is held.

Following Mr. Weidman's report, John Ringle, of Wausau, chairman of the Railway Rates Committee, reported that until the government operation of the railroads is discontinued, that committee will be inactive, inasmuch as associations are unable to protest effectively against the rates imposed by government administrators.

PRESIDENT APPEALS FOR MORE MEMBERS

Mr. Zimbal then read the annual address of the president. In his remarks he reiterated the appeal made by Mr. Weidman for more members and pointed out the social and material advantages which accrued to those active in the affairs of their association. However, he maintained that the value of an association should not be based merely upon the tangible results obtained, which are always great if proper co-operation is extended; but that the social advantages should be an important factor in attracting a large membership.

Not altogether optimistic were the remarks of Oscar Wilson, of Menominee, Wis., in his talk, the first on the program, entitled, "Cost of Manufacturing Brick Under War Conditions." He pointed to the jump of from fifteen to forty-five cents a day in the cost of labor in 1917 over that in 1916 and then to the increase in the cost of coal from $1.35 to $2.75 per ton; and prophesied that due to shortage of fuel manufacturing operations would be appreciably curtailed. According to the experience of his company, The Excelsior Brick Co., it is an advisable precaution wherever possible to secure the services of older men than those heretofore employed so that the military demands of the country will not disrupt the plant organization.

CONSERVING FUEL IN BURNING

A very profitable discussion of burning and methods of saving coal was started by Lambert Haigh, of the American Clay Machinery Co., Bucyrus, Ohio, in his talk on "Some Methods of Conserving Fuel in Burning." Mr. Haigh had just returned from the Iowa convention and pointed out with optimism the condition prevailing in the industry in that state. Drain tile manufacturers especially, because of the importance of their product in increasing the nation's food supply, had been handled with utmost consideration by fuel authorities. Also, for the first time in many years, according to Mr. Haigh, the initial cost of a frame house in some parts of the United States exceeds that of a permanent fireproof structure of burned clay.

It was shown, however, that in order to continue operations every effort must be made to conserve the supply of "black diamonds" so essential to the country's wartime activities. According to the speaker, two main divisions of cost in the manufacture of clay wares may be made, i. e., labor and fuel—and only fuel offers prospects of economy. Labor costs, because of decreased immigration and greater demands, are bound to stay at their present high level or ascend still higher. Economy will not be affected by a reduction in the price of coal but by the use of more economical methods of burning.

Burn more air, and fire light and often. Get your oxygen thru the fire boxes and not thru cracks in the wall and build your bag walls high to protect the ware from the oxygen not completely heated. Use air to force the heat down to the bottom of the kiln and don't be afraid of a little dark color on the top brick—it's only skin deep—and dampen the coal when it is very dry. In other words, make every effort to *save the pound.*

Upon the conclusion of Mr. Haigh's talk, a discussion was held upon the merits of waste heat drying systems used in connection with up-draft kilns. Several instances were referred to where the use of such systems is effecting savings as high as $25 a day.

PIONEER BRICKMAKER TELLS HOW TO BURN

One of the oldest brickmakers of the Middle West then gave to the delegates assembled the benefits of his experience in burning brick in up draft kilns, at Jefferson, Wis., since 1859. Anton Stiel, of the Jefferson Brick and Tile Co., the venerable old brickmaker, stated that he saved two days in his watersmoking period by starting his fires in the middle of the kiln, using hemlock as fuel. The side fires are started twenty-four hours after the center fires are lighted.

Following his discussion on burning, this intrepid manufacturer made an appeal for more accurate determination of costs on Wisconsin plants. He pointed out that altho the strenuous competition offered by Chicago companies was one factor in the high mortality of Wisconsin yards, the real cause was a lack of knowledge of costs and therefore a selling price that spelled loss rather than profit. He then volunteered information regarding the cost of manufacturing at his yard, revealing a spirit which would have been hard to equal. He tore the veil completely from intimate figures, showed the cost of his year's operations to the penny, gave the expenses entailed, and indicated the cost per thousand of the finished brick, which on his yard amounted to $10.107.

ANNUAL BANQUET BIG SUCCESS

In the evening the Association held its annual banquet, an affair which brought the members into closer association and one which proved highly profitable. Mr. Morgan, as has been stated, made an appeal for the members to encourage in their home cities the distribution of war savings stamps and stated that while the concentration of savings in the bank of the United States at the present time may work temporary hardships for the private banking institutions, yet the spirit of frugality and thrift inculcated will have a cumulative effect that will in the future be the greatest boon ever received by banks.

Following Mr. Morgan, State Fuel Administrator Fitzgerald gave a review of the coal situation in Wisconsin and told of the three-million ton dock shortage which that state had to face at the beginning of the year. It may here be stated that it was largely due to the efforts of the Wisconsin fuel administrator that the Northwestern states have not been, and will not be, confronted by a fuel famine this winter. The story of the Minnesota ore ships returning from Ohio ports with a coal rather than a water ballast is an old one, but it was this measure that kept the wheels of industry spinning in the Northwest during the present winter. Administrator Fitzgerald at this point indicated that even tho coal did cost $2.75 a ton, as stated by Mr. Wilson during the morning's session, American manufacturers were hardly in a position yet to protest. Paris, he stated, is today paying $100 per ton for fuel, while Italy is in the market for all the coal it can get at a price of $40 per ton.

However, little was said regarding the exact status of the clay products industry in the eyes of the fuel administrator. Altho the members left the banquet table with a clear knowledge of the national fuel situation and some of the problems which the fuel administrator met and overcame, its anxiety regarding the amount of coal which it would be allowed during the coming year was at the same point as when the first bread crusts were broken.

FUEL VALUES COMPARED

The first paper of the morning session on Friday was read by Prof. O. S. Kowalke of Madison, Wis. This paper was one of the best presented at the convention, and its title was "Fuel Values of Various Coals, Oils and Producer Gas." Prof. Kowalke showed the location of coal deposits, the comparative heat value of fuel mined at different points of the country and the heat value of coal as compared with wood and producer gas. Approximately 4.8 barrels of oil, forty-two gallons each, equal one ton of coal, according to the speaker, while a cord of wood, such as used in Wisconsin, is the equivalent to four-fifths of a ton of coal. In concluding his paper, Prof. Kowkalke pointed out the advantages of buying coal on a specification basis, provided the annual consumption was sufficient to warrant the expense of testing that would be involved.

A paper on "What Should the Clay Products Manufacturers Do to Meet the Shipping Problem?" was read by J. E. Randall of Indianapolis, who emphasized the advisability of using motor truck delivery for short hauls and relieving the railroads wherever possible.

"Tile Drainage of 1918" was the subject assigned to Prof. E. R. Jones of Madison for consideration. Prof. Jones, however, was unable to attend and his paper was read by Secretary Weidman. A very optimistic outlook regarding the farm drainage situation for the coming year is held by Prof. Jones, who believes that in order to expedite this work additional tiling machines are needed in Wisconsin.

Many of the points regarding the status of the clay products industry as affected by war conditions brought out in previous discussions were amplified and reiterated by John Ringle in his talk on "Adjusting Our Industry to War Conditions," which closed the morning's program.

OFFICERS ELECTED FOR COMING YEAR

The business of the afternoon consisted of electing new officers and attending to unfinished business. The officers chosen for the ensuing year were as follows: John Ringle, of Wausau, president; Samuel Gunther, of Port Washington, vice-president; Erwin Fricke, of Manitowoc, treasurer, and Samuel Weidman, of Madison, secretary.

Before adjourning a plan was developed for conducting an aggressive campaign during the coming year to increase the membership of the Association. The state will be divided into ten districts and present members located in each district will be delegated to make personal visits to the other clay products manufacturers in his territory—and swear them in for attendance at the coming convention. If the expectations of the officers are realized the 1919 convention will have an atendance more than double that which gathered at Milwaukee this year.

ROSTER OF THOSE IN ATTENDANCE

The following was the roster of those in attendance at the convention just held:

J. Ringle, Ringle Brick Co., Wausau.
Oscar Zimbal, Oscar Zimbal Brick Co., Sheboygan.
Oscar Wilson, Excelsior Brick Co., Menominie.
L. Haigh, American Clay Machinery Co., Bucyrus, O.
Chas. E. Paeske, Burnham Bros. Brick Co., Milwaukee, Wis.
Louis Hylland, Northern Lumber Co., Stanley, Wis.
Ed. Fricke, Manitowoc Clay Co., Manitowoc, Wis.
A. W. Hilker, Hilker Brick Co., Racine, Wis.
L. A. Cordes, Larson Brick and Tile Works, Watertown, Wis.
Thos. Larson, Thawau, Wis.
John J. Moroney, Chicago, Ill.
G. W. Kennedy, Green Bay, Wis.
Erwin Fricke, Manitowoc, Wis.
Leo J. Sheridan, BRICK AND CLAY RECORD, Chicago, Ill.
M. DeBoer, Milwaukee, Wis.
Ed. L. Koenig, Chicago, Ill.
Gunther Bros., Port Washington, Wis.
H. W. Carter, Cook and Brown Lime Co., Oshkosh, Wis.
S. Weidman, Wisconsin Survey, Madison.
A. O. Zerrenner, Zerrenner Bros., New London, Wis.
G. E. Burnham, Burnham Brick Co., Milwaukee, Wis.
Anton Stiel, Jefferson Brick & Tile Co., Jefferson, Wis.
G. Brubaker, H. Brewer & Co., Tecumseh, Mich.
J. E. Randall, Indianapolis, Ind.
H. W. Carson, Keystone Driller Co., Chicago, Ill.
J. M. Borough, Okalamjoo, Mich.
R. G. Knie, Acme Brick Co., Milwaukee, Wis.
F. E. Poels, Green Bay, Wis.
Kemmeter Bros., Jefferson, Wis.

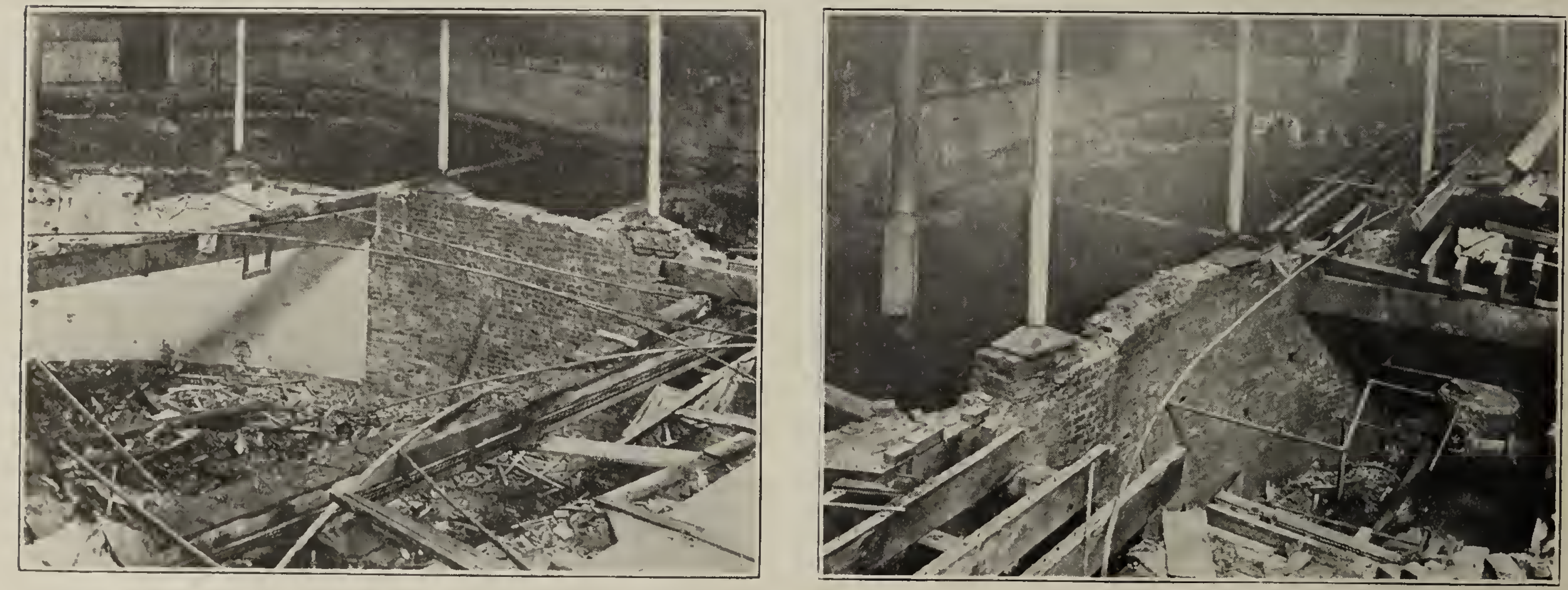
* * *

OLD BRICK GO INTO NEW WALLS

THE OLDEST THEATER in the United States, old Holliday Street, in Baltimore, Md., is being dismantled to make room for a magnificent new Civic Center planned by the authorities for a city more beautiful. But there are many who regret to see the passing of the historic old brick building, under whose roof such mighty actors as Booth, Wallack, Keene, Robertson, Fannie Kemble and a long train of others played their parts and then passed on.

The brick foundations of old Holliday Street Theater were laid in 1772. They were found to be absolutely intact when unearthed a few days ago. The photographs of these foundations accompanying this article were taken from the gaping, empty stage, torn with holes now and half buried in debris.

On the site of old Holliday Street a magnificent new concert hall and convention auditorium, a part of the civic center plan, is to be erected. It, too, will be of brick, and a plan has been suggested that some of those sturdy old brick from the foundations of the theater be utilized in the new hall merely for sentimental reasons. This may be done.



The Sturdy Walls Shown in the Picture Above Were Laid in 1772, and After Supporting Their Burden for Almost a Century and One-Half, Were Found to Be Intact When Unearthed a Few Days Ago.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Storage Shed Heated by New Method

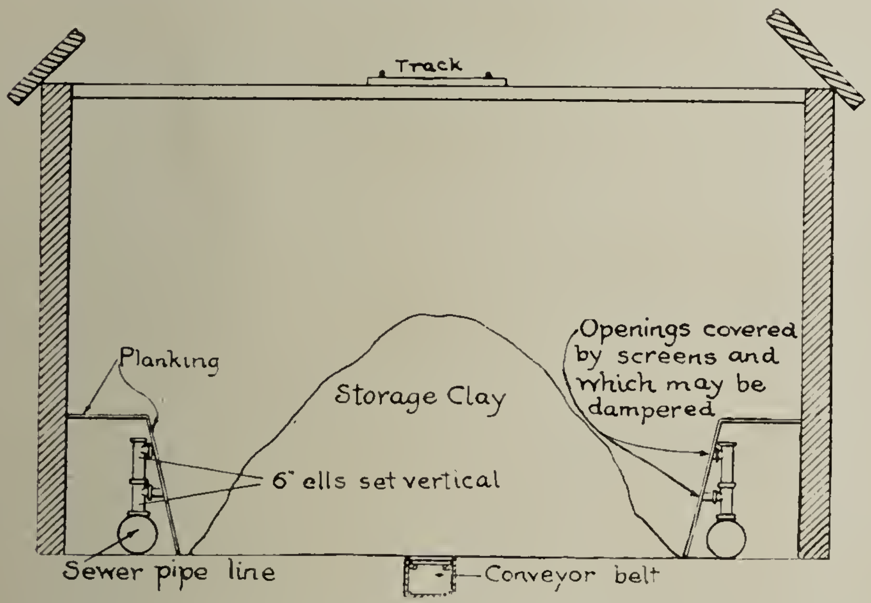
One of the chief disadvantages of operating a clay plant during the winter months is the trouble encountered in winning the clay and in handling frozen clay. To reduce these difficulties to a minimum many plants have built clay storage sheds in which is stored sufficient clay to take care of the demand when it is impossible to supply the clay direct from the mine or pit.

Sometimes these storage sheds are heated in winter by natural gas or steam but both of these methods are expensive and not always satisfactory.

An unusual method of heating a clay storage shed is that suggested by Cleve Hartzell, superintendent of the White Hall (Ill.) Drain Tile Co.'s plant. He has submitted a sketch showing how the waste heat from kilns can be utilized to a great advantage in keeping the storage shed warm in winter months.

The storage shed has a line of fifteen or eighteen inch sewer pipe running along the walls or built right in the walls which connects with the waste heat fan. In the former case a six-inch T or L branch is connected to the main line every short distance (to suit conditions) and rises vertically. The heat can then escape thru the openings on the T or L branch and enter the shed. One or more of these T's or L's may be used according to requirements. The openings are covered by a screen to prevent any clay from falling in, and planks are set up at a slant to protect the vertical pipe from the clay.

During the day when the men are working in the shed the fan can be kept running but all the holes may be kept closed by dampers and a vent opening at the end opened thus keeping the pipe line warm but eliminating the trouble due to obnoxious gases. It is claimed that by allowing the waste heat to come thru all of the openings, sufficient clay for a whole day's supply can be dried in but a few hours.

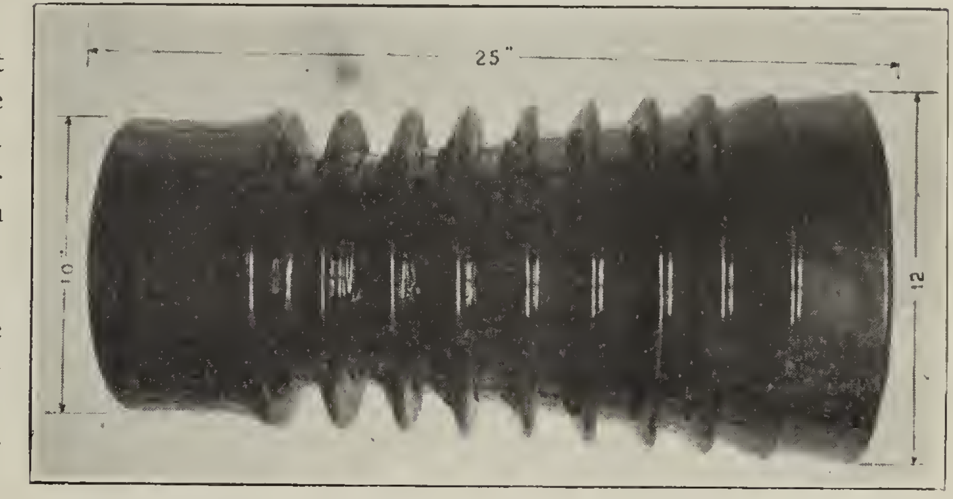


The Above View Shows How a Clay Storage Shed May be Heated Effectively by Means of Waste Heat From the Kilns. On Plants Where Conditions Will Permit Its Installation, This System is Worth Consideration.

Big Reduction Made in Drying Period

Until recently the General Electric Co. dried their huge pieces of electrical porcelain at their Schenectady factory in either of two ways; in closed rooms in which the temperature and humidity were under control and the open rack method whereby the ware was dried by simply placing it on racks in the main shop.

The open rack method required from six to eight weeks to dry the ware but by the closed room method and with control of relative humidity and temperature it was possible to reduce the time of drying for all pieces to one week. The General Electric Co. constructed these closed room dryers themselves and had several in operation for about three years up to a recent date when a Proctor dryer was installed. This dryer was built as a further improvement along the lines of humidity drying. It was thought that by passing the ware thru a dryer continuously their capacity could be increased and a considerable amount of floor space saved.



This Large and Complicated Design of Electrical Porcelain Formerly Required Several Weeks for Drying but Now is Dried in From Forty to Sixty Hours.

This dryer has now been in operation for six months and it takes care of all of the porcelain ware and has released a considerable amount of floor space formerly used for drying. The apparatus is seventy feet long by about eighteen feet wide and it has three tracks upon which the green ware is carried thru the dryer on specially constructed cars. The time of drying now is from forty to sixty hours, depending upon the size and nature of design of the ware.

⁂

How Soon Will Heat Insulating Material Pay for Itself?

This is a problem that should certainly interest the owner, superintendent, engineer, and everybody else connected with the economic problems that must daily be considered in and about the plant. At first blush it may seem like a rather indeterminate problem to solve, but elaborate tests have been made on the subject of heat transmission through bare pipes and on those tests the writer has built a formula giving the cost of the heat loss in any number of hours.

You Should Know of the Many Advantages of
THE POTTS SPECIAL
A Soft Mud Brick Machine
Self Striking—Horizontal—for Common and Fire Brick
Ask Us for Details and Names of Users
C. & A. POTTS & CO., Indianapolis, Ind.

Webster's Improved Continuous Kiln
We will be glad to explain in detail the new application of side and top fires, and draft arrangement, which make it different and better.
WEBSTER & KINCAID, 407 Greenwood Bldg., Cincinnati, O.
We carry a Complete Line of Clay Machinery

WHEEL BARROWS
When They Are Loaded
THEY BALANCE
That is a necessity—else you waste energy. Other features are good, some even better.
THE TORONTO FOUNDRY AND MACHINE CO
TORONTO, OHIO

CLARAGE
FANS-BLOWERS
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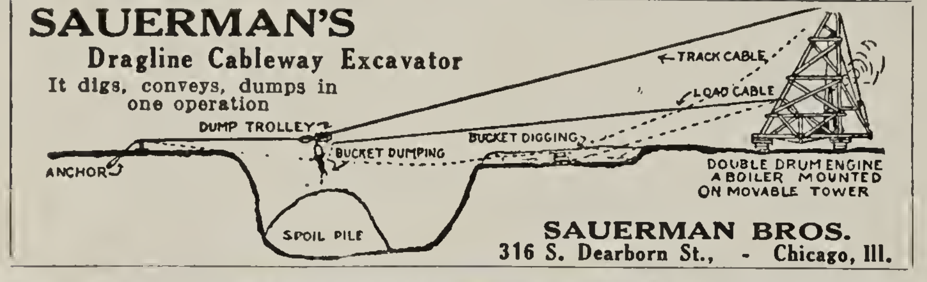
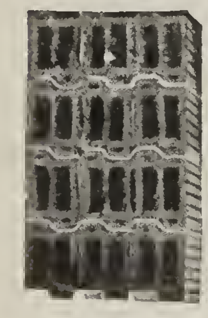
SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*



"LOXALL"
A Better Hollow Block
It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address
J. E. EXNER
602 Lincoln St. Coffeyville, Kas.

Reversing the formula to a more understandable word-of-mouth rule it is made possible to compute the number of hours required for a given heat insulating material to pay for itself. This is the rule:

Multiply the cost of the pipe covering per lineal foot in dollars by the number of British thermal units in each pound of coal, then by the efficiency of the boiler and then by the figure 2,000. We will call this amount "A."

Now find the temperature difference between the room and the hot metal of the pipe. That is, subtract the average room temperature from the hot pipe temperature, in degrees Fahrenheit. We will call this the "temperature difference." Multiply this "temperature difference" by .0056 and to the product add 1.6. Then multiply the sum by the area of the metalic surface in square feet, then by the cost of coal per ton of 2,000 pounds in dollars, then by the efficiency of the covering, then by the "temperature difference" and lastly divide this amount into amount "A" found above. The result is the number of hours required for the covering to pay for itself.

It is quite possible that this rule will give rather surprising results in a good many cases. The opinion of some engineers is that a covering will pay for itself in a very short time. They overestimate the value of pipe covering and coverings in general. Other engineers have a tendency to sneer at coverings claiming that prices are so high that they never pay for themselves. However, let us take an example and by means of this rule see for ourselves. Let us take a case where the cost of pipe covering per linal foot is $2; there are 12,000 British thermal units in each pound of coal; the boiler efficiency is 70 per cent. Multiplying one by the other and then by 2,000, as per above rule, we get for the quantity "A"—

$$2\times12{,}000\times0.70\times2{,}000=33{,}600{,}000.$$

The "temperature difference" in this case is assumed to be 200 degrees F.; the area of the metallic surface is 3.1416 square feet which is equivalent to the area of a pipe one foot in diameter and one foot long; the cost of coal per ton of 2,000 pounds is $4; and the efficiency of the covering is 90 per cent.

Applying the rule we get

Adding 1.6 to this we get 2.72.

$$200\times.0056=1.12.$$

Then multiplying by 3.1416, 4, 0.90, and 200 respectively we get 6,150.

This is the figure that is to be divided into amount "A" or 33,600,000.

Now, dividing 33,600,000 by 6,150 we find that the covering will pay for itself in 5,480 hours, which is equivalent to about 228 days, assuming that the pipe is under steam continuously, day and night. If the steam periods are intermittent as is often the case in heating systems the number of days, of course, will be greater. Thus in some heating systems where the pipes are under pressure for approximately 100 days per year it will take a trifle over two years for the covering to pay for itself. But insulating materials are very durable. In fact, there is no reason why they should ever wear out under proper care, especially indoors. Therefore, after one or two years of use the steam saved is "pure profit."

This rule is applicable to flat or round surfaces. A good way in which to use the rule, therefore, is to compute the cost of the covering per square foot and in the rule insert "one square foot" for the area of the metallic surface. The relative values of the various sizes of covering will thus easily be solved. Small pipe coverings usually cost more per square foot of surface covered and therefore it will take longer for the covering to pay for itself. This leads to the conclusion that large pipes, certainly should be insulated against heat loss if they are constantly under steam.

The reader will readily understand that a rule of this kind cannot apply equally well indoors and out-of-doors. The temperature difference is generally much greater out-of-doors and the radiating effect is also greater on account of the more serious nature of the air currents. A wintry blast against a hot steam pipe is notorious as a money waster. The writer, therefore, wishes to impress upon the minds of readers that in applying this formula to out-of-doors conditions it can be correctly assumed that the coverings will pay for themselves much more quickly than the result will indicate. The greater the temperature difference and the more serious the nature of the air currents, the more necessary the insulation.

The rule also shows that a high oiler efficiency will increase the time necessary for a covering to pay for itself whereas a high efficiency of the covering will decrease the time. It furthermore shows, of course, that a good inexpensive covering is most desirable. It is probably true, in extreme cases, that covering does not pay, but by applying this rule carefully it is the belief of the writer that such cases will seldom be found.—*W. F. Schaphorst.*

* * *

GETTING BETTER BURNS *and* SAVING COAL *with the* PYROMETER.

(*Continued from Page* 314.)

production of No. 1 ware, have been very satisfactory and show a reduction of thirty-six hours in burning time and a saving of 500 pounds of coal per thousand brick.

This plant is equipped with thirteen round down-draft kilns of an old type, twenty-eight feet in diameter and one new thirty-six-foot kiln. Part are equipped with ordinary basket grates and the remainder with dead bottom fire boxes. The large kiln shows a saving of 170 pounds of coal per thousand brick over the other kilns. The burners find it relatively easy to follow the curves under ordinary conditions. However, it is necessary to allow them some latitude on this point on account of unforseen conditions that are continually arising. The burners take an interest in the burning and keep close tab on the recorder records.

* * *

Thomas B. McAvoy, a brick manufacturer and former councilman, died on January 19 at his home in Philadelphia. Mr. McAvoy was born in Ireland, eighty years ago, and came to Philadelphia when he was four years old. For more than a half century Mr. McAvoy was engaged in the manufacture of brick, and altho he retired from active business some years ago, he remained president of the McAvoy Vitrified Brick Co., whose plant is at Perkiomen Junction, Pa. Thomas B. McAvoy, Jr., is its manager. Twenty-five years ago Mr. McAvoy, senior, was president of the National Brick Manufacturers' Association.

Experiment means to find out. It's good up to a certain point—and then it becomes waste. Some concerns like puttering about in the matter of making belt joints. The majority have adopted

CRESCENT BELT FASTENERS

as standard equipment. The story is interesting as a belting economy. Ask us.

CRESCENT BELT FASTENER CO.
381 Fourth Avenue, New York, N. Y.

Makes Assurance Doubly Sure

The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
Homestead, Pa.

Blasting without using the CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

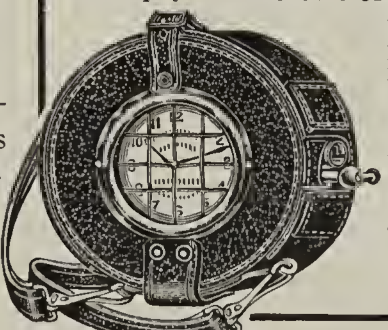
The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

Deduct Five Per Cent from the Base Rate of Your FIRE INSURANCE PREMIUMS

If your rate does not exceed five cents on every $100.00, the saving you make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.



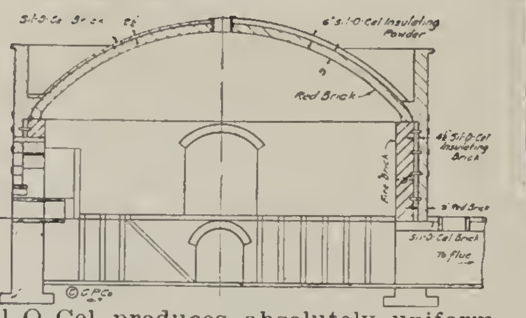
Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH SIL-O-CEL

INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg

RINO GEAR SHIELD

It will prevent wear on your gears and pinions; if it prevents wear, it eliminates frequent replacements; if gears are replaced less, there will be fewer "plant shutdowns"—and that means steady running and profit. You had better investigate Rino.

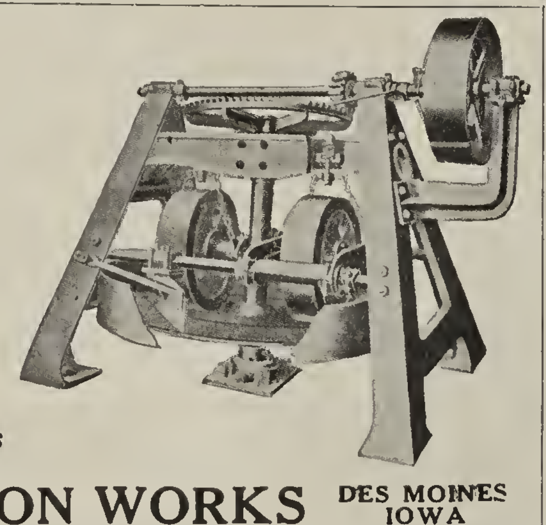
THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

QUESTIONS

A Three Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Can Silica Brick Be Made By Machinery?

New York—845—We would like to have you tell us if possible;

1. *If silica brick is being manufactured by machinery.*
2. *Can silica brick be made by machinery, in your opinion.*
3. *Have you ever known of anyone trying to make silica brick by machinery.*

Silica brick are at present being manufactured by machinery on at least one plant in this country. The A. J. Haws and Sons Refractories Co. of Johnstown, Pa., have been using machinery for the past few years to manufacture their silica brick and to all appearances they have been quite successful.

The two chief objections to the use of machinery for the manufacture of silica brick are, first, the quartzite which constitutes the major portion of silica brick has a hardness of seven, according to Moh's scale of hardness, and the wear on the dies of the presses is very great; second, a lack of uniform pressure on the repress machines often causes the brick to have a weak structure.

⁂

Lack of Uniformity in Color

846.—*New York—We have a clay that makes a very strong common brick but the color obtained in burning varies so greatly that our brick when made up in a wall do not make a good appearance. One side of the brick may be of a reddish brown while the other side a grey color. Either of these colors would be good enough but when both colors occur on the same brick, the brick do not look good. We do not think the trouble lies in the clay because upon breaking several burned brick we found all of the centers of a uniform color.*

One of our theories for this poor color is that the water which we use contains many minerals and when the brick are being burned the vapor in the kiln affects them.

The firm which operated this plant before we took hold did not have this trouble with the color, but they did not make the brick as solid or substantial as we are making them. A nearby brick plant, making brick from the same kind of clay does not have trouble such as we are experiencing, but their brick are not as strong nor as uniform in size as ours. This leaves us to believe that the trouble we are having is not due to the clay.

We would be glad to have you suggest to us a way of correcting this lack of uniformity in color.

The data which we have received concerning the variation in color to which your brick burns, leads us to believe

and ANSWERS

Best Authorities in Every Clayworking Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

that your trouble lies either in faulty watersmoking or in setting of the brick in the kiln.

Most plants err in taking too long a period for watersmoking, hence, we hesitate to say that you probably watersmoke too rapidly. However, the possibility is there and we would advise that you pay a little more attention to this part of your burn.

There are a number of different methods of setting brick in the kiln, but in your case we would suggest that you set them "flash set" or "face set" which should give you a uniform color in burning. Two other possibilities should be considered: They are the salts in the clay or water and the action of the sulphur gases in the kiln. From the data given us we hardly think that the poor color is due to the former item. The later case is more likely to cause scumming rather than discoloration, but if any scumming occurs in your ware we would advise that you look to this source as a possible cause for your trouble.

⁂

Has Trouble Getting Dry Brick

847—*Pennsylvania—We recently installed a fourteen track waste heat dryer but are having trouble getting a sufficient number of dry brick. We figure that we ought to at least get a minimum of* 50,000 *brick per day but there are times when we are not able to obtain more than one-half of this quantity, even tho our pyrometer instruments show a temperature as high as 900° Fahr. at the cooling damper.*

The dryer has a 6 *x* 8 *foot cross section heat duct from which the usual ducts run about thirty feet on an incline under the tracks. These latter ducts each have ten openings of* 3 *x* 24 *in. distributed at equal intervals thruout the length of the flues. The fan which supplies the hot gases to this waste heat duct is a constant speed fan of* 180 *in. diameter running at about* 112 *R. P. M. This speed does not permit us to get closer than five chambers (on a continuous kiln) to the fires, and no matter what temperature exists in the heat duct the hot or discharge end of the dryer is never hot.*

We have tried to remedy this condition by closing up a part of the openings under the tracks beginning on the track farthest from the fan and closing fewer holes on each track, the nearer they were to the fan. However, it was found that this did not help the situation. Next, by working on the exhaust end of the dryer we tried adjusting the damper under each track but to no avail. It seemed to make no difference except when the dampers were closed too much in which case the dryer would sweat. The fan at this end

Get This Can on TRIAL

Send for a Can Today

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.

Aerial Tramways For Economical Haulage

Manufactured by
BRODERICK & BASCOM ROPE CO.
SAINT LOUIS, MO.

A27

The House of Taylor

IN THE HEART OF THINGS

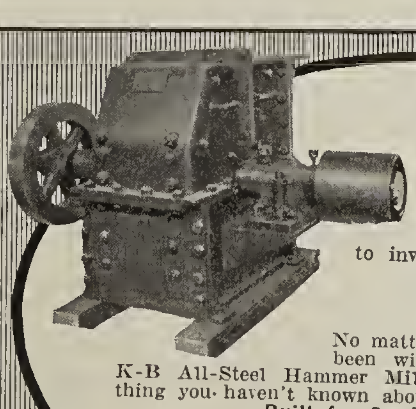
400 Baths
600 Rooms

Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day

Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate



It will pay You

to investigate the superior merits of the

K-B Pulverizer

No matter what your experience may have been with other crushing machines, the K-B All-Steel Hammer Mill will probably show you something you haven't known about pulverizing at low cost.
Built for Service and Durability.

Send for catalog now

K-B Pulverizer Company, Inc.
86 Worth St., New York

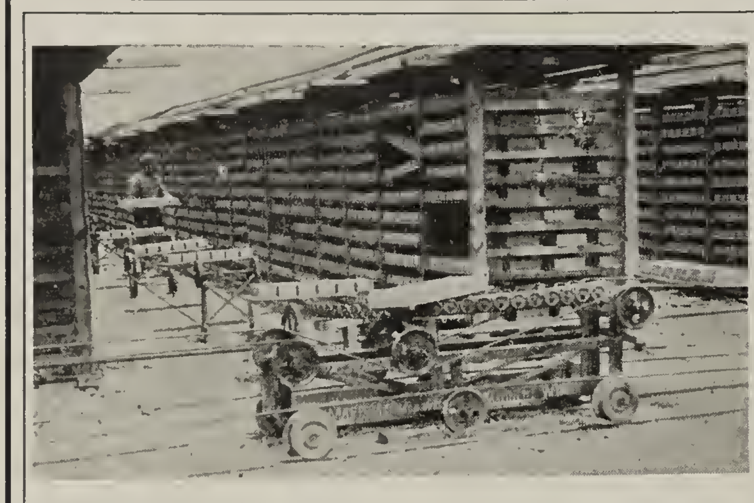
Uniform Heat

In Kiln or Dryer is essential to uniformity of product.

BRISTOL'S Recording Pyrometers

Record the temperatures maintained. The accumulated knowledge secured by these records enable you to secure the maximum in production and quality. Write for Bulletin 205.

The Bristol Co., Waterbury, Conn., U. S. A.



The A-B-C of Cost Saving
—
Anderson's Brick Conveyor System works when other yards are tied up for labor or bad weather.

MARINETTE IRON WORKS
MARINETTE, WIS. C. J. ANDERSON, Prop.

Pure Precipitated Carbonate of Barium
Highest Quality
Manufactured by
Port Morris Chemical Works, Inc.
Office: Strand Building
Broadway and 47th St. New York

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

of the dryer is 144 in. in diameter and runs at about 160 R. P. M. We are of the opinion that these fans are running at too high speed but the manufacturer does not think so. At the same time he is unable to offer us any suggestions that would help overcome our difficulty.

The difficulty that you are meeting with in drying your brick can hardly be solved in a definite way without first being on the ground and going over the situation carefully. Your letter suggests several features which might be the cause for your not being able to dry your product. For instance, it is very likely that the temperature of the gases as they enter the dryer is too low despite the fact that you state you have a temperature of 900° Fahr. at the cooling damper. This lower temperature may be due to leakage of air in the main duct or too much cold air is allowed to be admixed with the hot gases at the fan.

Most plants which have continuous kilns are able to take their gases for drying from the third chamber from the fire. It is possible that by drawing your heat five chambers back you do not obtain the required amount of heat. In connection with this point, it might be possible that while your fan is not running too fast for the dryer which is rotated at too great a speed for the proper manipulation of the kiln, the speed should be cut down so as to be able to draw your heat out of the third cooling chamber. This appears to be a good theory to work upon.

Watch the doors in your dryer to see that they are not allowing too much cold air to enter.

It is sometimes the case that the pressure in the main duct of the dryer is too great for the tunnel nearest the fan to obtain a sufficient quantity of gases and hence the brick dry only in the farthest tunnels. This difficulty may be helped by regulating the holes in the flues as you did, or by placing dampers on the flues nearest the fan which will catch the flow of gases and divert some of it into these tunnels.

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Fuel Order Worries Brick Manufacturers

848. *Illinois—There is more or less confusion among the brick manufacturers in this vicinity as to "Doctor Garfield's cessation of industries order." We understand, of course, that no brick are to be manufactured or other operations in the line of manufacture are to be carried on, on the days we have been ordered to shut down. However, it seems to us that we should be allowed to do work in the way of repairing our plants on these days, with the understanding that no fuel is to be used to accomplish this repair work.*

Some of our members are building new kilns and repairing old ones. They are also repairing machinery and buildings. This repair work helps to keep their men employed during the days they are not manufacturing and as no fuel is used except that required to furnish the heat necessary to keep the pipes from freezing, we cannot see what is to be accomplished by stopping this work in accordance with the Monday closing order. However, in order to be right about the matter we wish you would interview State Fuel Administrator Williams, laying the above facts before him. We feel that Brick and Clay Record *is the proper source to whom to appeal to get this matter before the administrator in the proper light.*

We attempted to see Mr. Williams and explain your case in detail but were unable to talk with him personally. He is as hard to see as any successful candidate for office the day after election. We were persistent, however, so the young lady who meets all comers took your letter and presented it to Mr. Williams, who read it over and handed out a text of the fuel order of January 17, 1918, as well as the interpretation thereof. Mr. Williams said that he would issue no further ruling in your case than is contained in the enclosed interpretation.

So far as we can see, you are justified in keeping your men at work repairing kilns, machinery and buildings. Certainly the fuel administration, or anyone else, could not object to your doing outside work. As for repairing machinery in buildings, so long as you burn no more fuel than to keep pipes from freezing, we do not see how there can be any objection to the men repairing machinery, and we would advise you to go ahead with such a program.

* * *

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host
of Interesting Happenings in the
Varied Fields of Clayworking

Personal

W. H. Sweat, superintendent of the Lansing (Ind.) Brick Co., fell dead while shoveling snow on January 16.

Gil C. Landgrebe, general manager of the Huntingburg Pressed Brick Co., Huntingburg, Ind., was confined to his home several days recently because of an attack of la grippe.

M. M. Morrow, of the Hocking Valley Brick Co., Columbus, Ohio, manufacturer of paving bricks, has returned from Detroit where he attended a letting of a paving contract of considerable magnitude.

H. S. Hamilton, president of the McArthur Brick Co., McArthur, Ohio, was a recent business visitor in Columbus. While in the Buckeye capital he called on the manufacturers and jobbers.

Henry C. Kleymeyer, general manager, and John Andres, secretary and treasurer, of the Standard Brick Manufacturing Co., Evansville, Ind., served on two of the seventy-six teams of prominent business men in that city a few days ago to sell over $1,000,000 worth of war thrift stamps.

Charles Harrison, of the Gaddis-Harrison Co., Columbus, Ohio, took a prominent part in the campaign among patriotic men of the Buckeye capital to secure a $3,000,000 war chest fund. Mr. Harrison was a captain of team No. 13 and did excellent work during the week ending February 12.

John Greusel, for many years in the brick manufacturing business in Detroit, Mich., died recently, aged 79 years. Mr. Greusel was born in New York state but had been a resident of Detroit for seventy years, and as a brick manufacturer, and later a real estate operator, had taken an important part in the upbuilding of the city. He was elected alderman in 1888, and before that served as treasurer of the town of Springwells, now a part of the city of Detroit.

DUPLEX

Speeding Up the
Nation's Transportation

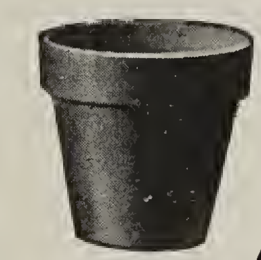
Duplex direct shipments reduce transportation costs and delays. They make possible the release of cars and locomotives needed for long hauls.

Built with a big margin of 'overstrength,' Duplex trucks are giving dependable service for contractors, road builders, brick manufacturers, jobbers—business men in all fields of industry.

Let us send you Duplex haulage facts and figures for your particular business. Write for the heavy hauler's magazine, "Duplex Doings."

Address all communications to Dept. 128.

DUPLEX TRUCK
COMPANY
LANSING, MICHIGAN



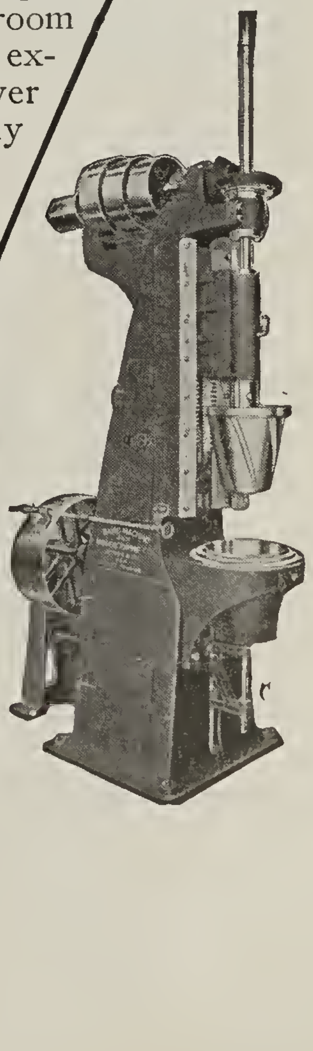
A bi-product
that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



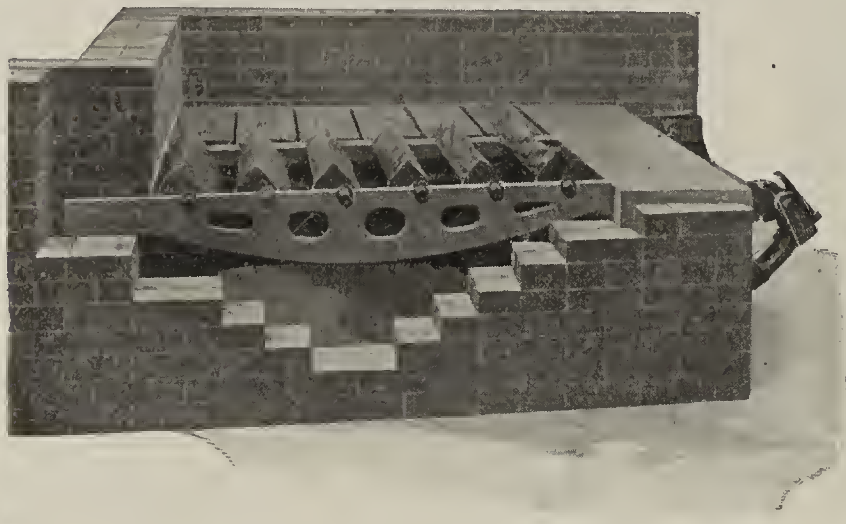
Cyclone Grates

—are actually saving from 10% to 25% of former coal tonnage used.

If you do not investigate—the fault of a continued 10 to 25% loss is on your own shoulders.

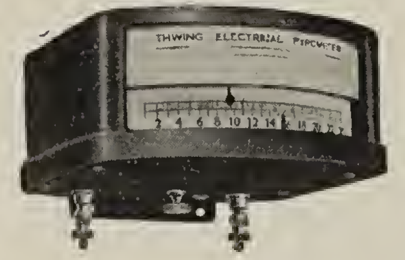
We absolutely guarantee 10%, it usually is more. Ask for full explanation and our easy terms.

Cyclone Grate Bar Company
Buffalo, N. Y.



Boost Production by Reducing Error

By eliminating guesswork in your heat control, Thwing Pyrometers provide a sure means of safely increasing output.



These dependable instruments measure and record temperatures on a commercial basis and with laboratory accuracy.

—they reduce spoilage.
—they save fuel by preventing superheat.
—they insure uniformity of product.

Thwing Pyrometers are simple and sturdy in construction, and usable by a man of ordinary intelligence.

By installing Thwing Pyrometers to control your heat treatments, you not only face war conditions squarely but place yourself in position to best meet the exigencies of after the war competition.

Catalogue No. 8

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Thwing Instrument Company
3336 Lancaster Ave., Philadelphia, Pa.

10

Arkansas

Under date of February 4, J. E. Walling writes us from Malvern, Ark., "Business looks good in this neck of the tall timber. Railroad cars are the only drawback. We look for a big output in fire brick, bauxite and silica brick, while building brick will keep in sight of all other enterprise."

California

The Livermore (Cal.) Fire Brick Co. is sold up to its fire brick capacity and is adding new kilns. The demand for face brick is also increasing.

The Lincoln (Cal.) Clay Products Co. is contemplating the construction of a large clay refining plant adjacent to its present works, located a mile northwest of Lincoln.

The Fresno Marble & Tile Co. has been organized at Fresno, Cal., by George Kaye and William F. Muir. The new firm has opened yards at 1937 Fresno Street.

The Piedra Magnesite Co. has been incorporated at Porterville, Cal., with a capital stock of $10,000 by J. W. Thomas, Thomas J. Curran, W. B. Phillips, Joe L. Mitchell and R. D. Stephenson, all of Porterville. The incorporators have extensive magnesite properties near Piedra, Cal.

N. Clark & Son, of San Francisco and Alameda, Cal., whose extensive plant at the latter place was burned some months ago, report that the big job of clearing away the wreckage has just been completed, and the work of rebuilding is now under way. It is hoped to have the plant in operation later in the year.

Gladding, McBean & Co., of San Francisco and Lincoln, Cal., have been awarded a contract for the architectural terra cotta for the Young Women's Christian Association building on Sutter street near Mason, the contract price being $6,670. The brick work and the setting of the architectural terra cotta will be done by Anderson & Ringrose, of San Francisco, for $26,063.

The sand-lime pressed brick plant located at the mouth of the American river, Sacramento, Cal., has passed into the hands of new owners and will be operated under the name of the Sacramento Pressed Brick Co. The plant will be put into operation immediately and it is the intention of the owners to operate to capacity, which is approximately 20,000 brick per day. Only first quality face brick will be made.

The L. A. Steiger brick plant at Antioch, Cal., at which operations were suspended some weeks ago, is to be dismantled and sold within the next few weeks.

White & Gloor, San Francisco, Cal., have been awarded the contract for the brick and terra cotta trimmings for the southeasterly wing of the San Francisco Hospital, now under construction.

The Calhoun Tile & Mantel Co., of Kansas City, Mo., has now entered the California field, having established headquarters for the state at 910 South Hill street, Los Angeles. The company will carry a considerable stock of tile and other specialties at Los Angeles and will do contracting and supply the trade. It is planned to incorporate the Los Angeles business a little later as a separate organization.

F. A. Costello, president of the California Paving Brick Co., San Francisco, says that in certain lines there will be no great resumption in the construction of brick buildings until after the close of the war, owing to the fact that the Government is now discountenancing many new projects. This has hit the sewer pipe business in a number of ways, tho in some instances the opposition has been set aside. The work on the sewer improvements at Corcoran, Cal., which was held up not long ago, has now been allowed to proceed.

J. O. Stewart, of Oakland, Cal., has organized the Sacramento Pressed Brick Co. and has secured possession of the old plant and yards of the Independent Pressed Brick Co., which was formerly in business on the south bank of the American River at its junction with the Sacramento in the outskirts of Sacramento. The plant suspended operations more than a year ago. Mr. Stewart has already secured sufficient contracts to insure the successful operation of the plant thruout the spring and summer. At the start it will turn out 20,000 pressed brick per day, and this may be increased later.

S. J. Coffman, Jr., of Los Angeles, Cal., who has been representing the burned clay sewer pipe manufacturers of Southern California in the long drawn out contest between the clay and the concrete sewer pipe interests before the Los Angeles city council, won out last week in a one-round impromptu affair with Councilman Reeves, of Los Angeles, the combat being pulled off at a meeting of the Public Works Committee of the city council called to decide the question as to whether or not cement sewer pipe should continue to be used in the Los Angeles sewers on a parity with burned clay pipe. While Mr. Coffman unquestionably won the personal contest, he appears to have lost his point with the committee, which has decided to continue to permit the use of both cement and clay pipe.

M. J. Dillman, president and manager of the Lincoln (Cal.) Clay Products Co. is now well under way with the improvements and extensions to the company's plant. The company has had a plant in operation near Lincoln for the past nine years, but has only recently begun the installation of a clay refining plant which will put the company's output on the market for a number of uses for which it has not previously been available. A large amount of pulverizing and grinding machinery is now in transit to the plant, and the preliminary work has already been completed. Beside turning out clay for burned clay products, an effort will be made to satisfy the needs of paint, oilcloth, paper, roofing and other manufacturers. Lincoln clays have long been prominent in the Pacific Coast brick and terra cotta trades, the extensive plant of Gladding, McBean & Co. of San Francisco being located at Lincoln.

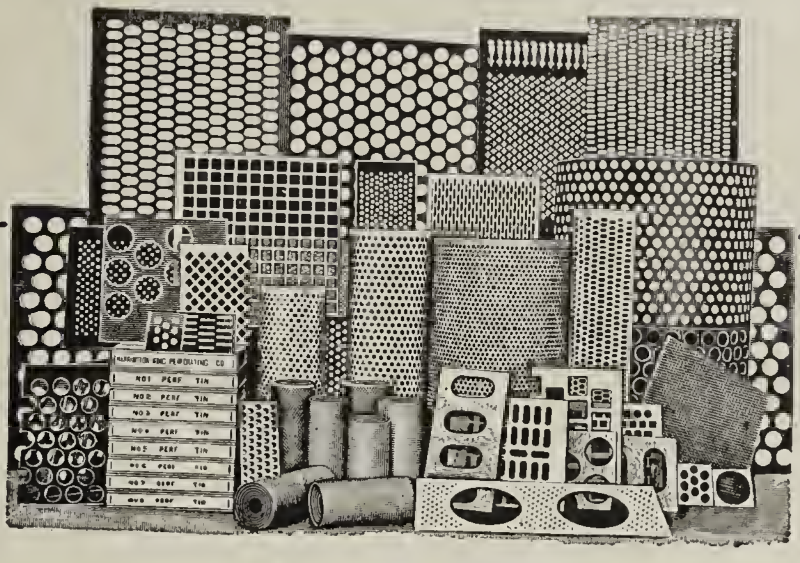
Owing to the entire absence of the speculative element in building and the general tendency to subordinate all financial operations to the big war needs of the Government, there is a good deal of uncertainty as to what the year 1918 has in store for the clay working industries. Some brick men still believe that the absence of activity in the erection of large buildings for private account will continue to be, at least in large part, recompensed by increased work in the way of public and semi-public work; but the idea is growing that the money will hardly be forthcoming even for public work except where a real necessity for the proposed work can be shown. It is known that the floating of bond issues for sewer work and other public improvements is being discouraged more

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand, Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity, Durability and Satisfaction

The Harrington & King Perforating Co.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.



USE "Brick and Clay Record" Classified Ad Columns because you'll get quick action.

Published every other Tuesday, it's the **newspaper** as well as the journal of the clay-products industry.

If you need help—have a machine for sale or are looking for a second-hand machine—a classified ad in "Brick and Clay Record" will bring results.

Eight cents per word for first insertion; six cents per word for each additional insertion.

BRICK AND CLAY RECORD

SAY I SAW IT IN BRICK AND CLAY RECORD

Please Note

"Quality As Usual"

And Quick Action

You know what steel and iron market conditions are like. Judge then the importance *to you* of the following facts:

FACT 1—The extreme high quality of The Standard Brick Drying Equipment before the war is being strictly maintained in spite of present conditions.

FACT 2—We are ready with a large stock of this high-grade material and can make prompt shipment of complete drying equipment.

Let us know your requirements.

The Standard Dry Kiln Co.
1540 McCarty Street
Indianapolis, Indiana

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Reoresentative in New England States.

or less; and this tendency to look very closely into these matters will, it is thought, increase as long as the war lasts. The big factor making for an increase in the demand for clay products is the growing demand for industrial structures and for housing requirements for workmen and their families. The shortage and high prices of steel products and of lumber are contributing causes leading to an increased demand for brick and terra cotta. In San Francisco, Cal., at least, there is also an increasing tendency to use brick for paving, several small contracts for paving brick having been let lately.

Colorado

Messrs. Erwin and Lindsey, of the Denver (Colo.) Pressed Brick Co., met with the board of trustees of the town of Castle Rock, on January 18, upon request of the mayor, to present the aims and intentions of the company and ask for an extension of its present lease or a contract of a similar nature that would insure them that the clay deposits adjacent to their plant, would be available for their use. An informal discussion of the matter followed and it was the expressed opinion of the board that the request of the Denver Pressed Brick Co. should be granted. Final disposition of the matter was deferred until the ground could be gone over and the limits of certain parts which should be reserved for residential purposes, could be definitely ascertained.

Connecticut

The Park Brick Co., of Elmwood, a suburb of Hartford, Conn., which conducts a retail coal business in connection with its brickyard, has been unusually busy the past few weeks distributing fuel to households and manufacturing plants.

An offer of the Springfield Brick Co. to pay $10,000 for 1,750,000 unburned brick and 650,000 burned brick in the possession of Ernest C. Halliday, of Hartford, Conn., trustee of the bankrupt East Windsor Hill Brick Co., was given a hearing by Referee in Bankruptcy Edward M. Yeomans on January 24. The Springfield company also wants it determined whether or not the $10,000 should be returned to it in liquidation of a $10,000 mortgage it has on the property. Attorneys for some of the creditors oppose accepting the offer, on the ground that the price is not high enough. The hearing was continued to January 30.

Delaware

James B. Oberly's old brick yard at Wilmington, Del., was visited by fire on January 24, with disastrous results. The buildings, comprising the engine room, boiler room and machinery room, together with a lot of valuable machinery, was destroyed, causing a loss of several thousand dollars, against which there was no insurance. This yard was abandoned about two years ago, when Mr. Oberly began operations at his new plant, and while the new plant had been stocked with new and improved machinery, the old equipment was being gradually moved from the former site of operation.

Florida

The Plant City Composite Brick Co. furnished all the brick that went into the construction of the new Allen Bakery at Tampa, Fla. This company makes a sand-lime brick in white and colors, and the rapidly growing business of the concern is evidence of the popularity of its brick.

Illinois

The Alliance Company, manufacturers of vitreous sanitary earthenware, 1924 Clybourn Ave., Chicago, Ill., announce that on and after February 1, 1918, they will be known as the Chicago Pottery Co. There will be no change in the officers or management of the company.

There has been filed for record a trust deed given by the Northwestern Terra Cotta Co., Chicago, Ill., to the Chicago Title & Trust Co., to secure a bond issue loan of $550,000, ten years, at 5½ per cent., secured by the plant of the company and six parcels of land on the northwest side. It is stated that the loan is for the purpose of purchasing the interests of Mrs. Horace L. Brand and Fritz Wagner in the company.

Indiana

The S. S. Kimbell Brick Co., an Illinois corporation, has filed notice with the secretary of state at Indianapolis that it has withdrawn from the state of Indiana.

James F. Stanley, one of the officials of the National Tile Co., of Anderson, Ind., has been appointed as one of the appraisers of the Spring Steel Fence and Wire Co., of that place, by the Madison County Trust Co., receivers of the company.

Thru an agreement with the Edgerton Tile Co., at Fort Wayne, Ind., Henry Beadell, fuel administrator for Allen county, obtained several hundred tons of coal from the company recently to supply some of the residents of the county who were unable to get fuel.

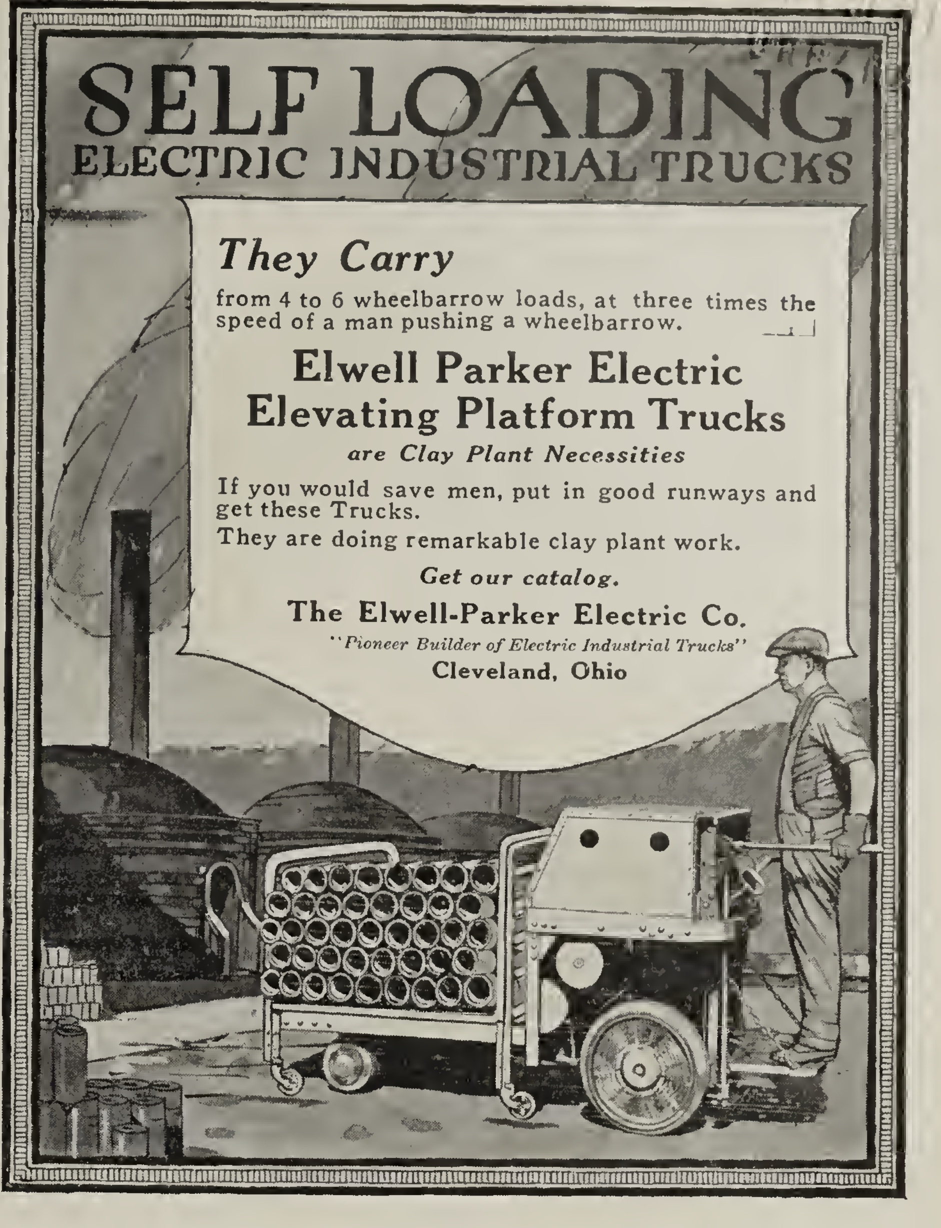
At a recent meeting of the directors of the Huntingburg Pressed Brick Co., Huntingburg, Ind., M. McNelis was reelected president and Gil C. Landgrebe, secretary and general manager. The company had a nice business during 1917 and expected to record a nice volume of trade during the present year.

In order that its employes might not suffer from lack of fuel this winter, the North-Frazier Tile Co., at Bluffton, Ind., has been buying soft coal in carload lots and retailing it to its men at cost. L. M. Frazier, president of the company, says this plan has been carried out at the plant all winter and fall.

Henry Clemens, general manager of the Cannelton Sewer Pipe Co., Cannelton, Ind., who was named recently as the fuel administrator of Perry county, has been very busy this winter and says his troubles are not yet at an end. He has handled the fuel problem mighty well in his section of the state and has received many congratulations upon the good work he has done.

Fire, the origin of which was not determined, destroyed part of a large four-story dry house at A. C. Fries's brick plant at Connersville, Ind., recently, causing a loss estimated at approximately $2,000. The loss was entirely covered by insurance but the company experienced serious financial loss as a result of suspension of operation while repairs were being made.

At a meeting held recently of the stockholders of the Cannelton Clay Products Co., Cannelton, Ind., the capital stock of the company was increased $8,500 and $5,000 of the amount was taken by the stockholders at the meeting. Other stockholders spoke for the remaining $3,500. This concern


SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

They Carry
from 4 to 6 wheelbarrow loads, at three times the speed of a man pushing a wheelbarrow.

Elwell Parker Electric
Elevating Platform Trucks
are Clay Plant Necessities

If you would save men, put in good runways and get these Trucks.
They are doing remarkable clay plant work.

Get our catalog.

The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

Your Fortune For Coal Or Use
Canton Shaking Kiln Grates
Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

Get our bulletins.

The Canton Grate Co.
Woodland Ave., Canton, Ohio
Southern Representative:
Mc BURNEY & JONES
Efficiency Engineers
829 Trust Co. of Ga. Bldg.
Atlanta, Ga.

ANTAGONISTS

ROLLIN'S
BARIUM
CARBONATE

vs SCUM

and Rollin's always
Wins.

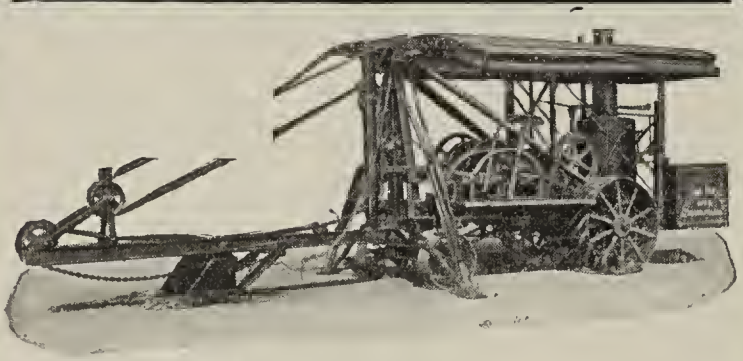
Add it to your clay at the pug mill, or the dry pan, it makes the scum producing salts insoluble and harmless to your ware.

Ask for information.

The Rollin Chemical Company
(Incorporated)
Charleston, West Virginia

The National Aniline and Chemical Co.,
of 244 Madison Ave., New York
General Sales Agents.

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

is one of Cannelton's late industries and is meeting with marked success. Its product is a superior quality of fire brick, for which there is a daily increasing demand and the plant is being operated at full capacity each day. Lee Brenner is general manager of the company. The old officers and directors were re-elected for another year.

The brick manufacturers in Evansville and other southern Indiana towns, report that trade is still off and many of the plants have been closed down for the past month or two, owing to the lack of demand for brick. It is not believed there will be a general picking up in trade until early next spring and in the opinion of manufacturers, 1918 is not going to be a great building year unless the war in Europe should end suddenly and a general reign of prosperity should ensue in this country. Some little building is being planned for Evansville and Southern Indiana points. A contract was let a few days ago for the building of a Carnegie library at Rockport, Ind. The structure will be built of brick. The Evansville Suburban & Newburg Traction Co. at Evansville, will erect car barns and sheds during the coming summer.

Iowa

A stock company capitalized at $200,000 has bought the Auburn (Iowa) Brick & Tile Co., one of the largest manufacturing plants in Sac county.

At the annual meeting of the Oskaloosa (Iowa) Vitrified Brick Co., R. M. Byer was elected director, to succeed Earl Bridges, who is now in the service. The old officers were all re-elected including H. H. Phinney, president, and A. P. Spencer, secretary-treasurer. The executive committee comprises H. H. Phinney, H. H. Sheriff, and J. H. Blakeslee.

Sisters and wives of some of the men employed on the plant of the Packwood (Iowa) Brick & Clay Co. voluntarily helped in the off-bearing and racking of tile, during a period of time when the plant was short of men. S. F. Steigleder & Son, proprietors of the plant, advise, however, that they do not expect to have to hire women to help in the next season's work.

Kentucky

Brick and clay products prices were sharply advanced in the Louisville, Ky., market during January. Common brick went only from $12 to $12.50, retail price, but other lines were still more radically advanced. Paving block, tho little used, is going about $5 a thousand over former prices, while building tile is advanced from $10 to $20 a thousand, and other items in proportion. Coal and labor and general advances in everything that goes into the cost were responsible, in spite of the fact that the demand has been an easy one.

Maine

Isaac Miller & Co., of Auburn, Me., have purchased a large brickyard at Thomaston, Me., which has not been operated for some time. The Auburn firm does not intend to carry on the business, but will probably sell the property, it is understood.

Michigan

Charles F. Clippert, vice-president and general manager of the George H. Clippert & Brother Brick Co., has been elected vice-president of the Builders' and Traders' Exchange of Detroit.

The Grand Rapids (Mich.) Brick Co. has given a trust deed covering all of its property, to the Grand Rapids Trust

Co., to carry out reorganization, which will be effected before spring. Assets of the company are estimated at between $75,000 and $85,0000, and liabilities about $55,000.

J. S. Haggerty, a Detroit brick manufacturer whose plant has a capacity of 60,000,000 stock and common brick a year, has matched the size of his output this year with a beautiful calendar for his customers. It is 48 inches long and over a yard wide—12 square feet of advertising that catches the eye of everyone who sees it. "The biggest and one of the prettiest calendars I ever saw," say those who have received them.

Manufacture by the city of Detroit of its own brick for sewer building has been vetoed by the department of public works on the ground that it would cost more than brick can now be purchased for on contract. Detroit will spend hundreds of thousands of dollars on sewers in 1918, to meet the needs of recently built up districts, and most of the sewers will be built of brick. J. A. Mercier, president of Mercier, Bryan & Larkin Brick Co., has informed the city authorities that conditions have forced up the price of brick sewer material.

To solve a portion of the sewer extension problem in Detroit, Mich., caused by bids far exceeding appropriations, the common council voted on January 29, to approve an additional appropriation of about $129,000, the amount needed to complete the Linwood and Third avenue sewers, in the coming year's budget. The board of estimates will be asked to take similar action. With these approvals, the department of public works will be enabled to have work continued on the two sewers so that they can be completed by summer. Mayor Marx urges immediate action on the city's sewer program, stating that Detroit will fail to obtain government contracts unless the sewers are built immediately, thus permiting better housing conditions, as the government is considering housing conditions in awarding contracts, and Detroit would be unable to fill contracts under present conditions.

Recommending brick as one of the best forms of paving for heavily traveled roads, Frank F. Rogers, Michigan State Highway Commissioner, told a convention of Michigan engineers at Grand Rapids on January 30 that the rapid completion of trunk line highways thruout the state and nation will be a vital factor in relieving freight congestion and in aiding distribution generally. He recommended no curtailment of road building programs in the state.

"We are on the eve of a great freight and traffic passenger business over the roads of the country," Mr. Rogers said, "and the state highway department plans to use its influence to expedite the shipment of needed materials. All main and heavily traveled highways should be built so well that they will stand the pounding of motor trucks. This means preferably brick, concrete or asphalt."

Members of the Detroit Face Brick Association had the unusual pleasure of hearing from three members of the Face Brick Dealers' Association of America, President Jno. M. Stoner and Secretary H. Serkowich, of Cincinnati, and W. H. Gifford, of Chicago, at their monthly meeting, January 15. Mr. Stoner urged advocacy by the local association of the extension of the city's fire limits, which is being considered, and also advised strong advertising of the use of face brick in building construction. Confidence in each other is the basis

Tycos

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.

Tycos Pyrometer
High Resistance Wall Type Indicator.

In selecting the proper equipment for the measurement of high temperatures, progressive manufacturers invariably choose *Tycos* Pyrometers.

May we send you our catalogues which explain these *Tycos* Instruments fully?

Taylor Instrument Companies
ROCHESTER, N. Y. 60

YOU

have probably observed that we are always using the loud pedal on the "Durability"—the "Long Life" of Union Steel Chains.
Well, you remember what Post said.
Now, listen to this—

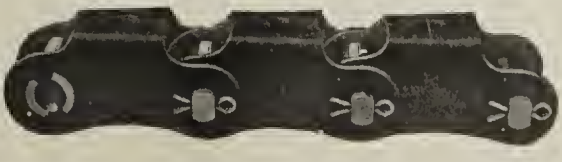
CITY OF DOTHAN
Dothan, Ala.
June 10, 1916.
THE UNION CHAIN & MFG. CO.
Seville, Ohio.
Gentlemen:
The chain we bought of you nearly a year ago has never caused us any trouble. **We wore out two other chains in four months before we installed your chain.**
Yours very truly,
A. S. LOWRIE, Supt. Water Works.

Also to this—(kindly note the dates).

CITY OF DOTHAN
Dothan, Ala.
Sept. 18, 1917.
THE UNION CHAIN & MFG. CO.
Seville, Ohio.
Gentlemen:
Please refer to your order No. 316, our order of **August 3, 1915,** and ship us duplicate of the same. (26 feet No. 15 Union Steel Bushing Chain.)
Yours very truly,
R. W. LISENBY, City Clerk.

Some brick manufacturers are wearing out two chains every four months. But the **successful boys** in the game are not. They use a chain whose service is reckoned in **years**—not months—

THEY USE UNION STEEL CHAINS

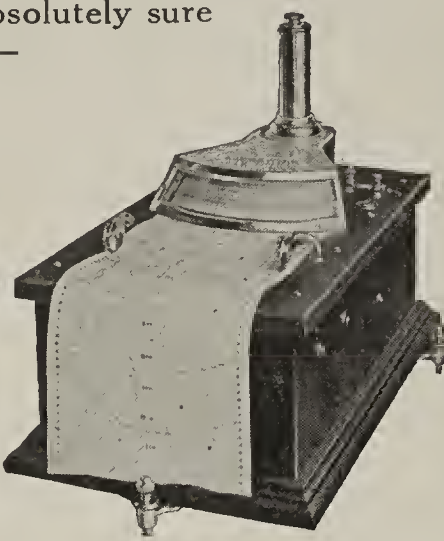


What Would It Cost

if your kiln was fired for one day without gaining in heat?

The whole day is wasted, the labor of firing is expended uselessly, the coal is burned without result (it may just as well have been dumped on the cinder pile), the kiln really stands idle, and this occurs often.

There is one sure, absolutely sure way to prevent this—



Use
Price
Pyrometers

They will tell you if you are gaining, losing or standing still. If they did no more, they would be worth many times their cost. Write

The Price Electric Co.

12367 Euclid Avenue Cleveland, O.

You won't have to worry about competition if you treat your clay with

R. H. Precipitated Carbonate of Barytes

You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry.

The Roessler & Hasslacher Chemical Company
100 William Street New York
Chicago, Ill. Cleveland O. St Louis, Mo.
Kansas City, Mo. San Francisco, Cal. Philadelphia, Pa.
Boston, Mass. New Orleans, La
Cincinnati, O.

of success of a local organization, Mr. Stoner said. Mr. Gifford interested the Detroit men with his story of how the Chicago association advertised face brick thru prizes offered at bricklayers' schools for the best job of face brick laying, and prizes to architects' schools for designs calling for artistic use of face brick. He also advanced the belief that building and loan associations, instead of banks, should be patronized by builders seeking loans, as they advance three-fourths of the valuation where the banks will advance only half. Mr. Serkowich, of the Cincinnati association, also spoke briefly. The men were in Detroit for the meeting of the executive committee of the national association.

Nebraska

The state railway commission has told the Western Brick & Supply Co., of Lincoln, Neb., that the injunction case in federal court secured by Missouri river cities, ties its hands in a complaint the company has had on file for a considerable time. It complained that discrimination existed between the rates on brick from Lincoln, Fremont, Hastings and Nebraska City as compared with rates from points not jobbing centers. It desired to have commodity rates substituted for the class rates.

New Jersey

The Whitestone Silica Fire Clay Co., Cartaret, N. J., has sold its local property consisting of about ten acres to new industrial interests. The land has a frontage on Staten Island Sound of about 500 feet, and is an excellent plant site. It is said that the new owners are planning for the construction of a new industrial works.

The Acme Sanitary Pottery Co., Trenton, N. J., has purchased the building and land of the Trenton Welding & Cutting Works. This property which adjoins the Acme plant, has a frontage on May Street and Kirkbride avenue, extending 300 feet along the tracks of the Philadelphia & Reading Railway.

Following the merger of the New Jersey Terra Cotta Co., Perth Amboy, N. J., and the South Amboy (N. J.) Terra Cotta Co. into one company under the name of the Seaboard Clay Manufacturing Co., the former organizations have filed notice of decrease in their capital stocks to complete the plans for the amalgamation The New Jersey company has reduced its stock from $400,000 to $20,000 and the South Amboy company from $50,000 to $15,000, common stock.

The building situation at Newark, N. J., and neighboring sections gives every indication of unusual activity during the coming spring. Unquestionably brick and terra cotta will be in considerable demand for proposed new structures, many of which will be of industrial type in the Newark meadow district. For the past two months construction of brick and other fireproof structures has been at a minimum. The recent order of the United States Fuel Administration affected the local concerns in the trade, causing a five-day shutdown that worked considerable hardship for production. This order also had its effect on local building activities.

N. H. Sloan, a brick dealer of Paterson, N. J., furnished the brick for one large government operation which was begun last fall. He has been asked to name prices on 300,000 brick to be used in the construction of a storage warehouse at Camp Merritt, located in Dumont, about twelve miles distant. If he secures this order he will be able to get his cars thru since government work is accorded priority rights. Mr. Sloan is receiving many good inquiries this month and believes that if the shipping situation clears with the opening of spring, building trades will improve proportionately. Building operations have been restricted everywhere in this vicinity on account of the railroad congestion.

Campbell Schultz, a well known brick dealer of Passaic, N. J., is experiencing considerable trouble this winter on account of the freezing of the Passaic river, on which the ice is now the thickest it has been in half a century. Passaic formerly was better situated for shipping than some of the surrounding cities for the reason that the Passaic river was navigable and brick could be brought up the river on barges, as well as being shipped by rail. At present Mr. Schultz is awaiting the release of some of his later shipments which were caught in the ice and frozen in solid. Other shipments are tied up on account of the railroad congestion so that Mr. Schultz is beginning to realize what it means to have both means of transportation closed.

The brick dealers of Paterson, N. J., are interested in the opening of the Passaic river to navigation as far as Paterson. Recently meetings have been held and a bill is to be introduced in the legislature annulling the charter of the Dundee Water Power Co., which controls the flow of the river above Passaic. With that dam out of the way, it is likely the government will undertake dredging. If the river were open, brick and other building materials could come up the river as well as by rail. If the Morris and Essex canal is reopened, the situation would be greatly improved for dealers in the coarser commodities. All the brick men in Paterson would be helped and this would insure a more rapid growth in the future. Brick and tile men are strongly urging the project of opening the river but they are only a part of the concerted movement in that direction.

Common brick has advanced to $13 per thousand in Paterson, N. J., and vicinity and a further increase is expected, altho not because of an increased demand, since very little business has developed. An occasional small order comes in for fire brick, face brick and common brick but very little movement is reported in any variety in this vicinity. The market remains firm, but without much stir to show whether or not the material is wanted. The Hudson river is frozen solid, the Passaic river has the thickest coat of ice it has had in fifty years; Raritan bay is frozen over for the first time in half a century and ice has formed in all of the basins and docks along the New Jersey shore so that it is impossible to move barges or anything but the most powerful tugs and steamships, and these are required for more urgent uses. Therefore, the brick business is at a standstill. A number of dealers see light ahead, expecting a fair business in the spring. As soon as the situation clears, considerable new mill construction is scheduled for Paterson. The American Locomotive Works and the National Silk Dyeing Co. are considering a housing proposition for their employes. A special committee of the Chamber of Commerce is investigating the same subject, N. H. Sloan, a brick dealer, being one of the active workers on this committee, so it looks as tho something is to be done this season. The Botany Mills are developing a housing proposition at Allwood, N. J., not far from Passaic, which combines a number of novel features. Development only awaits the outcome of the present water and rail congestion.

New York

The Albany (N. Y.) Clay Products & Crucible Co. has increased its capital of $10,000 to provide for expansion.

"WE'RE replacing leather and rubber belting with the *Gandy* kind every day.

"Why?—the original stitched cotton duck Power, Thresher, and Conveyor Belts cost a whole lot less than the leather and rubber kind, and do the work equally well.

"Then, too, the belt user has come to know the dependability of *Gandy* service — 'on-the-Job' expresses it exactly.

"*Gandy* agents, carrying complete *Gandy* stocks, are located at all main jobbing points, making it possible for your supply house to give you quick action on your belting wants.

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"Whenever there's any doubt in your mind about the width and ply of *Gandy* you ought to use, put it up to us—our engineering department is employed to serve you."

Genuine *Gandy* stitched cotton duck belts can always be told by the painted green edge and well-known *Gandy* trademark.

Write for samples and prices

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732 West Pratt Street
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The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

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Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
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Clay-Working Problems	1.50
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Notes on Pottery Clays	1.50
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Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, **Book Department,**

Brick and Clay Record
610 Federal Street, Chicago, Ill.

The Basnick Tile Co., New York City, a New York corporation, has filed notice of dissolution.

The Better Built Homes Co. has been incorporated in New York, with a capital stock of $10,000. M. E. and D. M. and G. V. McPhearson, all of 872 East Eighth street, Brooklyn, are the incorporators.

Material dealers at Syracuse, N. Y., are encountering fair building conditions. There has been a good demand for tile and this is being used locally in homes more than ever before. The brick market has been inactive.

The market for common brick and face brick at New York City has been very quiet. Weather conditions are unquestionably responsible for this situation, and the ice-bound river condition is holding up the arrival of barges.

I. Lester Bedell, purchasing agent of the Atlantic Terra Cotta Co., Tottenville, Staten Island, has resigned to accept a similar position with the Air Nitrate Corporation, New York City. He will be succeeded by Walter E. Sharrot, formerly paymaster. The resignation is also announced of Samuel Whitehurst, a vice-president of the company.

The Richmond Brick Co., 50 Church Street, New York City, has filed a petition in bankruptcy. This company operates a large brick making plant at Green Ridge, Staten Island, and was incorporated in 1904 with a capital of $225,000. The company's works have been closed down for the past few weeks owing to the decreased price of brick. John B. Johnston is receiver.

The building spirit at New York City and vicinity is one of conservatism. The severe cold weather has been against rapid construction of many of the structures now under way, and plans for the opening of new office buildings and theaters have been retarded. There is a fair demand for brick and terra cotta for structures of this nature, and with plans now on the boards of local architects considerable increase in building is looked for in the spring.

In a review of the labor market in December, 1917, the Industrial Commission, of Albany, reports that the stone, clay and glass products group in December, when compared with November, experienced losses of four per cent. in both the number of employees and the total wage payments. The cold weather, combined with the coal shortage, as well as the usual winter slackening in activity, were responsible for the decreases shown by all of the industries except glass. The group, as a whole, had five per cent. fewer workers and paid out eight per cent. more wages than in December, 1916.

The estimated cost of building work reported thru the building departments of the ten first and second class cities in the state of New York show a decline of eight per cent. in activity for the past month, as compared with the previous month. From December, 1916, to the corresponding month of 1917 there was a decrease of forty-five per cent. in the cost of building operations for which permits had been issued. Four cities, as well as the borough of Queens in New York City, had an increase of activity over November. In all of these cities there was a very large number of new buildings for which plans had been approved.

Manufacturers of brick and tile in Central New York are cheerfully obeying the fuel administration orders and shutting down their plants as far as possible every Monday. Only enough men are maintained at the plants to care for the kilns, which under government regulations are "continuous processes" and must be kept going.

The producers of building material take the matter in an optimistic way. They hope the Monday holidays will not be extended beyond the ten week period, but if they are, will cheerfully comply as a patriotic measure. Some of the firms are paying their men and some are not.

The shutting down of the plants will not materially affect building operations here this spring. The plants have plenty of orders ahead, but have also in many cases a sufficient stock on hand so that they will not suffer from the ten-day layoff.

All the manufacturers are experiencing the greatest difficulty in getting coal, but none have as yet been forced to close down on this account. Many of them have been running on a day to day supply.

Ohio

The authorized capital of the Finzer Bros. Clay Co., of Sugar Creek, Ohio, has been increased from $50,000 to $100,000 by papers filed with the secretary of state.

The Cleveland (Ohio) Builders' Supply Co. has been awarded the contract for the interior brick of Rice School and for the North Doan School, Cleveland. Foundations have been finished and construction is now under way.

The Concrete Tile & Brick Co., East Liverpool, Ohio, has been incorporated with an authorized capital of $15,000 to manufacture bricks and other clay products. The incorporators are J. E. Heydenreich, Albert A. West, Ward B. Morrell, A. D. Seckman, Theodore Smith and others.

The plant of the Hallwood Brick & Tile Co., Columbus, Ohio, making common brick and hollow tile, has suspended operations temporarily because of the extreme cold weather and lack of fuel. Operations will be started when a fuel supply is secured.

At the annual meeting of the American Gypsum Co., held recently at Port Clinton, Ohio, the following were elected officers: J. H. McGrady, Braddock, Pa., president; F. J. Griswold, Port Clinton, vice-president; J. B. Davis, Cleveland, secretary and treasurer. F. J. Griswold was re-elected general manager.

The flood in the Ohio river, that caused a great deal of damage to boats and barges, has thus far not caused any serious losses to the brick men here. The barges and wharf of the Blair Brick Co., Cincinnati, Ohio, have thus far escaped damage, tho it cannot be said that later some losses will not be sustained by this company.

William H. Crume, receiver of the Trimble Brick Co., was granted authority by Judge Patterson in common pleas court January 29 to sign a thirty-day option to sell the two plants of the company, at Glouster and Trimble, Ohio, for $75,000. Both plants have been idle for several months.

The Hocking Valley Brick Co., in conjunction with the Nelsonville Brick Co., operating three plants in the Hocking Valley, reports two of the plants closed down because of lack of coal. Two of the plants manufacture paving brick while the other is making fire-proofing. Just when operations will be resumed depends largely on the coal situation.

The colored Y. M. C. A. building to be erected on East Spring street, Columbus, Ohio, at a cost of between $75,000 and $100,000 is one of the larger pieces of construction

100° in the SHADE—AND UP!

Belts operating
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INDUCED DRAFT BLOWERS

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You can't expect them to last unless they are protected.

Heat injures a belt.

It makes it porous, like a dry sponge.

The belt slips, polished, and cannot pull the load.

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You can avoid this trouble and obtain constant active service from these belts by treating them with

CLING-SURFACE BELT PRESERVATIVE.

It keeps them pliable without making them soft.

It prevents slipping without being sticky.

It unites itself firmly with the fibres, lubricating and preserving them, and prevents dry rot, cracking and decay.

Your belts will last longer, work harder, and give you no trouble.

Send for our interesting booklet on fan belts, or let us ship you a can for sixty days' trial. This obligates US to make good with YOU.

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booked for 1918. There are several other large projects on the way and it now looks like building will be fairly active early in the season, at least.

LeRoy Gaddis, of the Gaddis-Harrison Co., Columbus, Ohio, is well encouraged over prospects for business in the spring. He says that there will probably be more building in the spring than was generally supposed and that prospects are getting better every day. Trade in face brick and other clay products at this time is quiet in every way.

Manufacturers of fire brick in Ohio have been having a better run of operation than some other lines, because of preference given to fire brick shipments. But the fuelless days as inaugurated by National Fuel Administrator Garfield has caused many of the fire brick plants to suspend operations and when there is a day's layoff, it requires considerable time for the plant to get back to a normal basis of production.

J. M. Adams, secretary and general manager of the Ironclay Brick Co., Columbus, Ohio, which operates a large face brick plant at Shawnee, speaking of conditions in the face brick trade said: "The trade is very quiet at this time because of lack of shipping facilities. Production in the Hocking Valley section is now at a low ebb because of these conditions and the future is quite uncertain. Fuel shortage is also cutting down production."

Arrangements have been completed for sufficient coal to place the Ohio State brick plant at Junction City, Ohio, in operation. The plant has been idle for several months because of lack of coal and it is planned to keep the entire plant in operation from this time on. In all seventy-one prisoners from the Ohio penitentiary are employed at the plant, which makes pavers exclusively. The extreme cold weather is curtailing the output.

Emmet Howard, who has been sales manager of the Claycraft Brick Co., Columbus, Ohio, for the past few years, has resigned to devote his entire time to the Columbus Fire Brick Co., a jobbing concern which he has been operating for some time. He has opened offices on the fourth floor of the Hartman Building. W. T. Matthews, who has been a salesman with the Claycraft Brick Co. for the past two years, has been promoted to the position of sales manager.

The Robinson Clay Products Co. has purchased a section of the old waste way of the east side of the canal, between State and Center streets, Akron, Ohio, paying the state $7,500 for the property. The tract is 12 feet wide and 240 feet long. John I. Miller, state superintendent of public works, who had charge of the sale, turned the money for the property into the state treasury January 25. This gives the company all the land between the canal and Main street.

The Cincinnati (Ohio) Sewer Pipe Co., with a yard on the river front, was damaged by the recent rise of the river, and the loss, while not likely to be great, owing to the fact that little stock is carried there in the winter months, will amount to something. The books and other data were taken out in time to save them from loss. The company operates a yard at Norwood and it is likely that the river front branch will not be reopened at the old place. A new location, out of the flood district, will likely be secured.

Frank J. Shaffer has been elected secretary of the Hocking Valley Products Co., Columbus, Ohio, which operates a large brick plant in the Hocking Valley. The

There Is Just One Reason Why You Should Use

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They are best, and best, because *they actually do save* belts, power, machinery and prevent accidents.

They do not slip.
That keeps the belts from wearing out, it keeps them from flying off; it eliminates jar on the machines being driven, and 98% of the power delivered to the pulley—goes to the machine.

The Cork Insert Company
168 Federal Street
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Equip your line shaft with Cork Insert pulleys

annual stockholders meeting was held recently when other officers were re-elected as follows: S. L. Chamberlaine, president; Sidney S. Schuyler, vice-president, and Norbert Heinsheimer, assistant secretary and treasurer. All of the officers, with the exception of Mr. Shaffer, are residents of New York.

What action the late suggestion of Secretary McAdoo will have on the brick and allied clay industries of Cincinnati, Ohio, to stop home building, cannot now be stated. Naturally the brick men want to help, and while this will curtail their business, the outcome cannot be foreseen at this time. The annual meeting of the Building Construction Employers' Association, which will be held in Cincinnati, Ohio, on February 14, will doubtless consider this, and some action will be taken. It was intended to discuss the future of the building industry at this session.

Manufacturers of face brick in Ohio are not operating to any great extent. The main reasons are lack of coal and lack of shipping facilities. While some of the plants have their own coal supply and thus are not handicapped in that manner, all are having their troubles with the railroad situation. Cars are few and motive power on many of the roads serving brick plants is partially broken down. The extreme cold weather, when the mercury has been hovering near the zero point, has made it more difficult to move freight. Thus the brick plants are suffering. It is estimated by manufacturers who are in a position to know, that the output of the face brick plants in the Buckeye state during January was from 10 to 12½ per cent. of capacity.

The name of the Builders' and Traders' Exchange has been changed to that of the Builders' Exchange, the title being adopted at the annual meeting of the Exchange on January 29. There will also be changes in the operation of the organization that will be a help toward making this a more progressive association in the future. Among the innovations will be a grouping of the membership by classes, so that the various branches can form sub-organizations and thus be enabled to work more helpfully. The idea is to make it a factor in endeavor and whatever will help in this way will be done in the future. The annual meeting had been postponed for some time, and now that there have been some steps taken, things should move forward in a manner to make it a building help of note.

Plans for doubling the capacity of the Keller Brick Co., Akron, Ohio, have been completed by a new company which has purchased the Rubber City's clay plant. The new company comprises: president, O. A. Alspaugh; vice-president, I. S. Myers, mayor of Akron; secretary-treasurer, N. J. Long; directors: M. S. Long, vice-president, Portland Rubber Co.; F. W. Jones, sales manager, waterproof clothing branch, the B. F. Goodrich Co.; T. W. Kimber, attorney. George W. White, for ten years superintendent of the Wadsworth Brick Co., will be manager of the Keller properties. The Keller plant has been producing about 40,000 brick a day. This is expected to be increased to 80,000 daily. Both building and paving brick will be made according to vice-president Myers, but paving brick will be featured, because of the governmental demand for improved highways. The new company has been incorporated for $200,000. The plant is located near the intersection of the Pennsylvania and B. & O. tracks, with a frontage of 2,000 feet. There are

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Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
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A size to suit every requirement.

For the small plant—
The hand poked type.

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The mechanically stirred producer.

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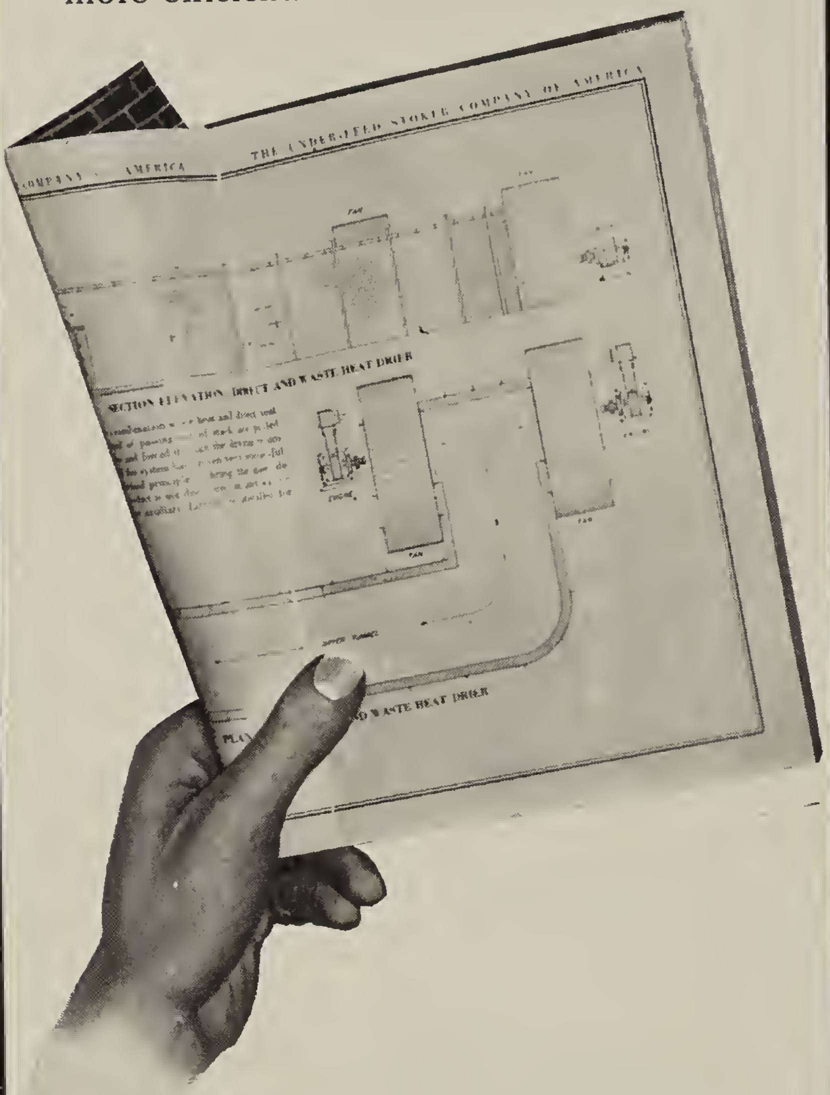
Fuel Combustion Facts

That will save every Brick and Clay Product Manufacturer money are in this book.

It contains general data, drawings and descriptions that will show you how the other fellows are making their plants more efficient.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32 acres of land included with the plant, 12 acres of this being in heavy clay deposit.

Pennsylvania

The Montgomery Shale Brick Co., West Point, Pa., has closed its plant for the rest of the winter.

The Hazelton (Pa.) Brick Works is furnishing brick for the new buildings now being constructed by the Jeanesville Iron Works. This is a munition plant and is making many extensions for increased capacity.

The Martin Brick & Paving Co. is being formed at Pittsburgh, Pa., by W. A. Iseman, F. P. Bush, T. Martin and John T. Duff, Jr. An application for a charter has been filed with the Secretary of State at Harrisburg, which will be heard February 25. The company proposes to manufacture brick, tile and sewer pipe. Temporary offices of the company are at present located at 1237 Oliver Building.

The building situation at Philadelphia presents a good outlook for the coming spring. There has been a fair demand for brick from many of the local industrial plants devoted to war orders and building additions for plant increases. The Tacony Ordnance Co. is completing the erection of a large plant in the Tacony section.

Reading, Pa., will do little street repairing this summer and build hardly any new streets, because a large sum has been lopped off the appropriation made to the Department of Streets and Public Improvements for 1918. Mr. McConnell, the head of this department, will have $30,000 less at his command to do the work this year than last year. Quite a lot of street improvements will be slated to go into effect after the war.

An embargo on shipments from Pittsburgh to Chicago and points west has been imposed by the railroads on practically all classes of freight, due to the freight jam in Chicago yards. Pittsburgh manufacturers find the ban more rigid than placed by Director McAdoo upon traffic between Pittsburgh and the Atlantic Coast.

The federal embargo, now in effect about Pittsburgh, has made little change in the local freight situation, according to officials here, who assert that the only difference is in respect to munitions. These are now going forward only when shipments are specifically approved by the war department, while previous to the new order the decision rested with the railroads.

Much surprise was occasioned when at Beaver, Pa., a jury returned a verdict in favor of the defendant in the case of Mrs. Fannie Shilton against the Pennsylvania Clay Manufacturing Co., which was being heard for almost a week. The action which had been pending for almost two years. was to recover damages for the mining of clay beneath the property of the plaintiff in the vicinity of Crows Run. No damages were allowed for the undermined land.

Manufacturers of fire brick in Beaver county, Pa., will not be required to close their plants Monday, according to Fuel Administrator W. W. Piper, of that county, provided these plants are manufacturing brick to be used in furnace or mill work in plants where government supplies are manufactured. As the greater number of the Beaver Valley brick industries at this time are occupied in getting out orders for these requirements, the majority will operate Monday.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

Visualizing Brown Installations

Recently the Brown Instrument Company, of Philadelphia, sent out a very fine folder showing the views of ten representative clay plants.

With each view is a brief description of the equipment used, the conditions encountered and a recital of results. If you wish to look over at your leisure, information about coal saving pyrometer installations, it will be profitable to send for this folder.

* * *

Better Drivers Insured By ALL-YEAR Cabs

"The truck owners who get uninterrupted service from their trucks are the men who employ drivers who know how to handle and take proper care of trucks," says H. P. Branstetter, of the Kissel Kar Co.

"These are the class of drivers who enable their employers to maintain shipping schedules in the face of obstacles that interrupt the schedules of other owners and they do it with less loss and less wear on their trucks.

"We received a letter the other day from one of our customers in which he states that in addition to the protection which the All-Year Cab gives his drivers and the increased efficiency which the drivers received from such protection, he has found that such protection attracts the better class of operators.

"In these days when Uncle Sam is counting on every business concern, particularly manufacturers and producers of war goods, to employ those methods and appliances that will save time, conserve energy and increase their service, truck owners should do everything in their power to maintain an uninterrupted haulage and delivery schedule."

* * *

New Bonnot Bulletin

The Bonnot Company, of Canton, Ohio, has issued Bulletin C C showing their Combined Brick Machine and Pugmill, also Brick and Tile Cutters.

This booklet has been issued without any attempt at elaboration, but it makes an instant appeal to the clay products manufacturer who is desirous of finding out the details of a high-grade line of brick machinery like the Bonnot. The cuts are excellent reproductions, and show most faithfully the details of construction of this company's machines in a way that cannot help but impress upon you the real reason for the satisfaction which Bonnot machinery has given for these many years.

This company is making a complete line of clayworking machinery, and their slogan "Let Us Standardize Your Plant" has become well known in every clayworking section.

Copy of this bulletin will be mailed to any clay products manufacturer who will write to the Bonnot Company, at Canton, Ohio, and ask for it.

Insures Uninterrupted Winter Haulage and Delivery Schedules

Closed for Winter

Open for Summer

STOP laying up your trucks in rain or snow storms—stop risking accidents and excessive wear and tear by speeding up to get under cover—stop tying up your transportation facilities. The new Kissel ALL-YEAR Cab gives full protection to drivers in most severe weather, increasing their efficiency, insuring competent handling and care of trucks, and keeping them in operation the year 'round, regardless of climatic conditions.

In winter, the ALL-YEAR Cab is a warm, dry, closed cab—weather, draught and leak-proof. In summer, it provides drivers with a cool, open housing, by removing the winter attachments, an exclusive feature with Kissel Trucks.

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The Kissel built-in quality in all vital parts, the powerful Kissel-built power-plant, dependable brakes, special heat-treated frame, etc., insure reserve strength that easily takes the strain of continuous service on all roads and grades, at an economical upkeep and maintenance.

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SAY I SAW IT IN BRICK AND CLAY RECORD

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

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Jackson & Church Co.
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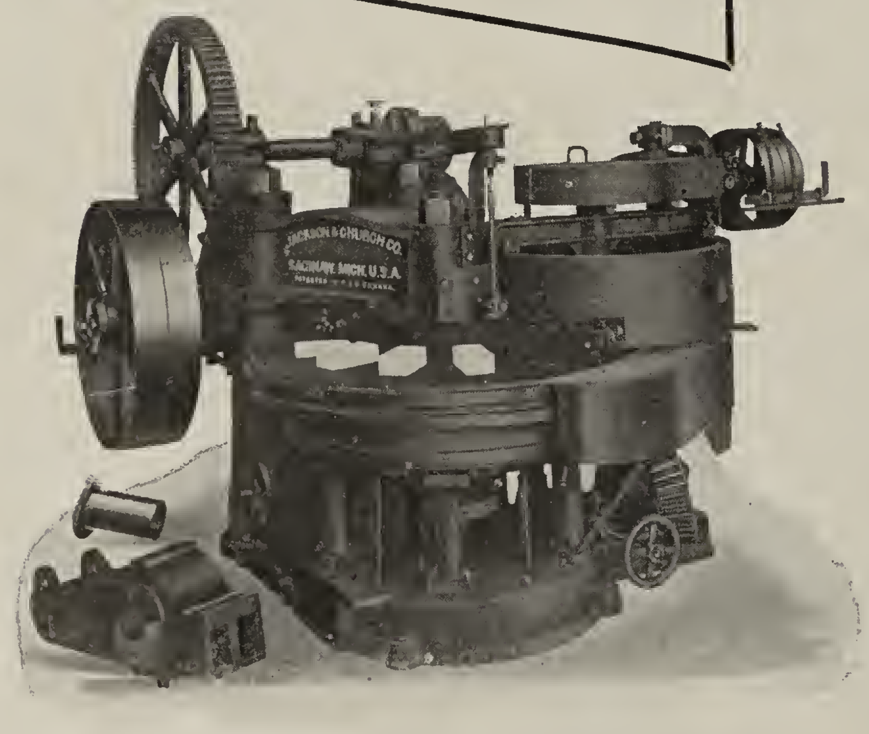

The "Saginaw" Rotary Table Brick Press

SAY I SAW IT IN BRICK AND CLAY RECORD

"Not This Trip, Old Pal"

We wish that we could reproduce it, but we cannot; we wish that we could tell you about it—and we'll try. "Not This Trip, Old Pal" is the title of a picture on a calendar, published by the Hercules Powder Company, of Wilmington, Del.

It is difficult to get enough looking at it—the soldier boy standing at the gate of his home in full uniform, with rifle in hand, his regiment marching away. Presumably he is saying good bye to his hunting dog, a setter, standing expectantly believing that all is set for a hunt, but "Not This Trip, Old Pal," we're set for bigger game.

If you have good red American blood in your veins, the kind that tingles over American memories, the kind that pulsates strong over visions of the present and future, you will like it and you will send for it and you will be a better American because of it.

* * *

The Motor Truck

The motor truck has assumed a predominant place in the automobile news of the day. Trucks have come into their own.

"The automobile industry which has so nobly taken hold of government enterprises for war work, has received much of its inspiration and enthusiasm from the support given it by the newspaper men," says M. L. Pulcher, vice-president and general manager of the Federal Motor Truck Co.

"The interest, however, of the public is changing. This is seen as you glance over almost any newspaper in the country. Commercial haulage is one of the most vital elements in the country's business and in the winning of the war. Business men are interested in completing their contracts. The War Department is interested in equipping the army and navy and forwarding supplies to all departments. Naturally, the motor truck being the most mobile means of fast transportation, is receiving a great deal of attention from these men.

"One of the most interesting phases of the extension of motor truck activity is found in the story of inter-city trucking. Several companies have incorporated for over one million dollars each to carry on inter-city trucking. Cleveland, Toledo, Detroit, Cincinnati and other cities in the central West will soon be brought closer together by the motor truck trains. This will work great relief to the manufacturing plants in these cities. Every citizen of the United States will be affected directly or indirectly by these developments of transportation. They will help our country. They will help each one of us. Why shouldn't we be interested in the news about motor trucks."

* * *

Clay Tile Silos Profitable

The year 1918 will be a memorable one in agriculture, so many of the war swept countries being unable to produce even one-half of former crops. Consequently upon the American farmer will depend to a great extent the provisioning of the world.

Rural America will be prosperous, as never before dreamed of, and this condition will obtain in spite of any external condition that is controlled by man.

It is obvious that with 1918 another prosperous year, the sale or rather the purchase of silos of clay tile will reach proportions that will be enormously beyond the capacity of the factories.

"Beyond the capacities of the factories," that is an expression to conjure with, and it may solve your difficulties.

It is not at all difficult to change a brick plant, a drain tile plant, a hollow ware plant—or even a sewer pipe plant into a Clay Tile Silo Plant. The changes in machinery and methods are simple and inexpensive, and the result is a factory that can sell its capacity output to a willing market at profitable prices and with government sanction.

To make your business permanent, by making the silos you sell—successful, use Pierce steel doors, and Pierce accessory hardware. The use of these ready made accessories insure proper construction, and that means satisfied buyers.

The Pierce Company, 1106 Waldheim Bldg., Kansas City, Mo., will gladly tell you more.

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Our Technical Society

THE SILICATE INDUSTRIES, which include the manufacture of clay products, might well be proud of their admirable technical organization—the American Ceramic Society. Due to a new and aggressive spirit which has taken hold of the society it is beginning to measure up very satisfactorily with similar organizations in other lines of business.

It might be well for those who are members of the society and who have its interest at heart to turn back in sort of a reminiscent manner to the address of Herbert R. Wheeler, of St. Louis, Mo., president of the society during the year 1899, in which he said:

"At the Pittsburgh meeting of the National Brickmakers' Association, on February 17, 1898, Messrs. Geysbeek, Gorton, Orton, Bleininger, Fiske, Gates, Giessen, Holl, Lovejoy, and Richardson held an informal meeting and outlined a scheme for starting a society of ceramic technologists, to which they invited Messrs. Binns, Burt, Griffin, Langenbeck, Mayer, Mueller, Pass, Ries, Stover, Walker, Zimmer and Wheeler to join them at Columbus, Ohio, on February 6, 1899, to effect a permanent organization. The success of that initial meeting which was attended by seventeen out of the twenty-one charter members, is well known to most of you, and while the number was small, the enthusiasm and results of that meeting augur well for the future of the society, and the value of its work and influence." Surely "Daddy" Wheeler proved to be a good prophet.

It is interesting to note the society started with twenty-one charter members, but it is more interesting to note that the present membership totals close to eight hundred and fifty—a rather substantial growth during a period of twenty years. To show that the society has not fallen into a rut, it might be said that a gain of fifty-two per cent. in membership was made during the past year. Large credit is due to the membership committee of which Ross C. Purdy, of Worcester, Mass., is chairman, for this splendid showing. The untiring efforts of this liberal-spirited body of ceramists have put new life in the society.

Every activity within the society is on the upgrade. Details concerning its various activities are given in the pages immediately following and will bear the most careful reading on the part of each and every one interested in the manufacture of clay products.

It can truthfully be said that the annual meeting of the American Ceramic Society was the biggest thing in Indianapolis during the week of February 11 to 16, far overshadowing any activity of the parent association, the National Brick Manufacturers' Association.

In addition to pursuing a very active membership campaign, the society in the coming year will probably launch the publication of a monthly journal, containing the papers read at each annual meeting. That is, these papers will be divided into twelve parts and published monthly instead of annually in one volume. Many other notable achievements were accomplished at the annual meeting, details of which appear on other pages of this issue.

An effort to arrive at the reason for the society showing such a commendable spirit of progress, reveals the fact that this is undoubtedly due to the democratic nature of the organization's government and its membership. Nearly every member of the society feels personally responsible for its success, and this being the case, a large amount of good work has been done on the part of committees and individuals toward the furthering of the society's interests and the promulgation of its plans.

Other organizations in the clay products manufacturing industry would do well to take a lesson from the American Ceramic Society.

* * *

The Second Fuel Conference

BRICK AND CLAY RECORD does not glory in the mistakes and failures of other people. We are deeply conscious of our own shortcomings, are always open for criticism, and have repeatedly invited it. We count as our best friend, the reader who helps us improve the service of our institution to the clay products manufacturers of America.

Pointing out an error, however justified one may be in so doing or however great the responsibility is for doing so, is not a pleasant task and it is with no joy that we enter in the discussion of a gross piece of mismanagement in connection with the recent conference which certain representatives of some divisions of the clay products manufacturing industry had with the United States Fuel Administration at Washington, on Wednesday, February 20. A story covering this conference and other recent developments in the fuel situation as it applies to clayworking is found beginning on page 399 of this issue.

In accordance with an understanding that a further conference with P. B. Noyes, chief of the conservation department of the United States Fuel Administration, would be held as soon as the joint committee representing the paving, face and common brick associations could consult with their people as to the possibilities of conservation by standardization, or elimination of unnecessary shadings and gradings, and pooling, in addition to direct curtailment by specific percentage decrease in production, the above mentioned meeting took place at Washington.

The war service committee of the American Face Brick Association was present. Paving brick manufacturers sent no delegation. Messrs. Warren Griffiss, of Baltimore, and William Schlake, of Chicago, in a broadminded and liberal spirit, journeyed to Washington believing that they were acting as the war service committee of the National Brick Manufacturers' Association in accordance with developments at the initial conference held on January 18 and 19. They went with the hope of reaching some agreement with the representatives of the other divisions of the industry involved, regarding curtailment in fuel consumption. On the afternoon of the 19th when everyone was trying to get together on a broad mutual program, one of the members of the joint committee received a copy of a letter written by T. A. Randall, secretary of the National Brick Manufacturers' Association, addressed to P. B. Noyes, in which the statement was made to the effect that the membership of the N. B. M. A. had conferred power upon the president and secretary of that association to represent their interests in any negotiations with the fuel administration, but neither the President nor the Secretary of the N. B. M. A. were present to discharge their duties. With Mr. Randall in Indianapolis writing such letters as these to P. B. Noyes, and allowing the gentlemen who thought they were representing common brick, to make the trip to Washington without advising them beforehand of the important action of the N. B. M. A., it was somewhat embarrassing for Messrs. Griffiss and Schlake, particularly as Mr. Schlake endeavored from 4 p. m. of the 19th until 8 p. m. of the 20th to get Mr. Randall on the long distance telephone at Indianapolis without success.

We feel that the matter of reaching a fair and square agreement with the fuel administration as to what the various branches of the clay products industry should enjoy in the way of coal supply during the coming year, is one of very vital importance. Nay, it is more than that; it is a most serious matter with some branches of the industry. The government does not feel that this subject is a joke. On the other hand its decisions are backed up by the power of the highest authority in the land and when enforced will effect every manufacturer in the various branches of the clay products industry that will be "rationed."

It developed at the conference on February 20, that the mind of Mr. Noyes was working in the direction of *favoring priority for fuel to factories which consume the least fuel in the production of specific commodities.* As will be noted in the report of this conference, appearing on another page of this issue, most of the manufacturers present objected to this idea very strenuously.

We repeat that the matter of securing an equitable adjustment of the coal supply for the clay products manufacturing industry from the fuel administration is growing mighty serious. If Mr. Noyes should decide to carry out his expressed ideas as to the type of plants that should get fuel and those who are to be given last choice, it would mean that if you own a brick plant and for some reason or other have not been able to bring about the greatest possible economy of fuel in burning you are in great danger of being forced to close your plant for the period of the war, in fact; you would probably have to, and you might not be able to survive the storm.

Brick and Clay Record does not mean to infer that it is encouraging the waste of fuel; on the other hand, we believe that every measure should be adopted for conservation. We believe that manufacturers who wilfully and persistently waste coal, should not be allowed to have it. But we simply wish to point out exactly what would result from the adoption of the plan over which Mr. Noyes has been meditating.

DOES IT MEAN ANYTHING TO YOU THAT YOU SHOULD BE ADEQUATELY AND ABLY REPRESENTED AT WASHINGTON IN THESE FUEL CONFERENCES?

Be Sure to Read

Report of Ceramic Society's Annual Meeting on Page 794
Second Fuel Conference at Washington, Page 399
Several Exceedingly Valuable Articles on Burning Beginning on Pages 403, 406, 411, 416 (more like these to come next issue)
Does Drainage Pay? Page 409
Some Sharp Points in the Income Tax Law, Page 416
Report of Nebraska Clayworkers' Annual Meeting, Page 418

In This Issue

AMERICAN CERAMIC
TREMENDOUS

A Gain of Fifty-Two Per Cent. in Membership is Reported at Enthusiastic Meeting at Which a Big Program for Coming Year is Adopted, Involving a Change in Rules, the Publication of a Monthly Journal, a New Drive for Increased Membership, and the Decision to Hold an Annual Exhibit in Conjunction with the New York Chemical Exposition

HOMER F. STALEY
President American Ceramic Society

FOR THE FIRST TIME in its twenty years of existence, the American Ceramic Society missed the presence of its past secretary, Edward Orton, Jr., at its annual meeting, which was held on February 11, 12, 13 and 14 at the Claypool Hotel, Indianapolis, Ind. Altho Professor Orton's absence was greatly felt, all meetings were very well attended and those present were enthusiastic in their participation in the many subjects which were offered for discussion. Evidence of the general growth and expansion of the American Ceramic Society was everywhere noticeable. It was stated by one who is officially connected with the society that this year's attendance was equal to that of the New York meeting, which was said to have been the largest ever held by this organization.

On Monday morning, February 11, the meeting was formally called to order by President George H. Brown, who requested Professor Charles F. Binns to open the meeting by leading the audience in singing the "Star Spangled Banner." The transaction of old business closed the morning session. The afternoon of the same day was spent in reading papers, a list of which are given in this report.

"SECTION Q" MEETS ON MONDAY

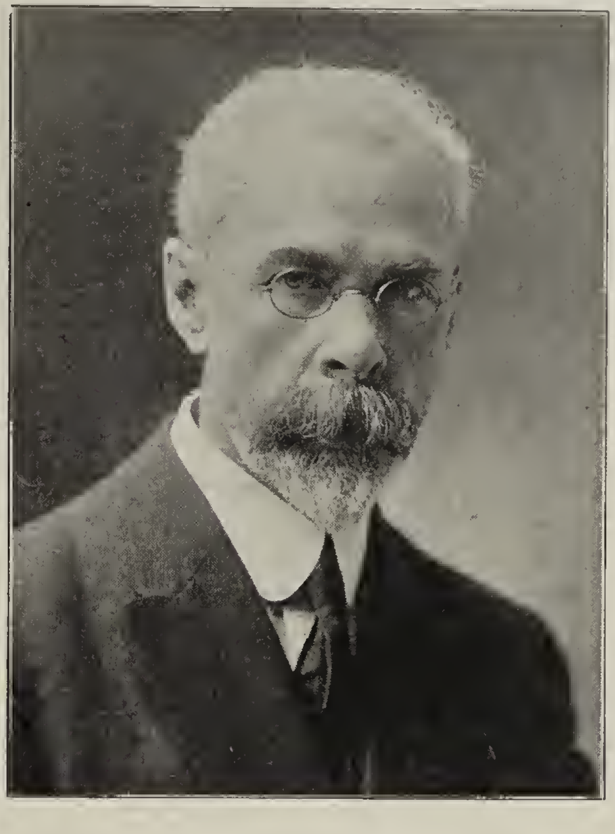
Monday evening was spent in merriment by nearly everyone present at the convention. The usually much enjoyed "Section Q" of the program was in charge of the membership committee who arranged for a special entertainment for this evening. A banquet was given at which fully two hundred people attended, and one of the big features of the evening was the roll call which was conducted by Ross C. Purdy. Nearly every one present had to get up on his feet at one time or other and give his name, his connection, and the town from which he came. The evening later resolved itself into a college yelling and singing match in which Ohio State and the University of Illinois seemed to have all the better of the argument, owing to a large number of their alumni present. However, due credit must be given to Prof. Binns and his three assistants who sang the song of their alma mater, the New York State School of Clay Working and Ceramics, to perfection.

Tuesday's sessions were partly given over to the reading of papers and to the reports of the various committees. One of the most pleasing reports—the outcome of a vigorous campaign on the part of the membership committee, of which Ross C. Purdy was chairman—was that telling of the great increase in membership of the Society. This increase is best shown by studying the following figures:

On February 1, 1917, the membership of the American Ceramic Society consisted of four honorary, ten foreign active, seventy-one resident active, forty-seven foreign associates, four hundred and fourteen resident associates, and no contributing members. On the same day a year later, the membership stood four honorary, eleven foreign active, eighty-one resident active, forty-nine foreign asso-

SOCIETY SHOWS PROGRESS

Stimulated by the Pressing Necessities of War Times, Progress in the Field of Ceramics During the Past Twelve-Month has Been Swift and Expansive, Many Notable Achievements Being Made. The American Ceramic Society, Thru its Committee on Military and Economic Preparedness, has been Directly Responsible for the Greater Part of this Progress



CHARLES F. BINNS
Secretary American Ceramic Society

ciate, six hundred and twenty-four resident associate, and twenty-six contributing members. These figures were increased to six hundred and fifty-two resident associate and thirty-four contributing members by February 13. This shows a total increase of membership on February 13, 1918, compared to February 1, 1917, of two hundred and eighty-five members, which is an expansion of about fifty-two per cent. This great gain in membership is due largely to Mr. Purdy's consistent efforts, in the pursuit of which he gave up much of his own valuable time.

WILL EXHIBIT AT CHEMICAL SHOW THIS FALL

The treasurer's report showed a very good operating balance on hand. Following the treasurer's report the board of trustees made its formal report. It contained mainly the following matter. An honor roll was to be made up of all the society members who are in the service of the government. Their dues are to be remitted during the time they are in service, but they are to be allowed all regular privileges of the society. Carl Langenbeck was voted reinstated by the board and charters were granted to the following local sections in the order named: New York State, Chicago, Beaver Falls section changed to Pittsburgh section, Northern Ohio, New England, Central Ohio, and the St. Louis section. One of the two sets of the Transactions of the American Ceramic Society, which formerly remained in the New York library is to be removed to the secretary's headquarters, while the other set is to remain in New York at the United Engineers Library. The set of Transactions has frequently been an aid of reference to members of the Society visiting New York City.

The representation of the American Ceramic Society at the chemical exposition, which was held at the Grand Central Palace, New York City, during the week beginning September 24, 1917, was so successful that it led to the creation of a committee to take charge of representation at the fourth exposition to be held in September, 1918. This committee has arranged for an entire section in the center of the mezzanine floor. Two-thirds of this space has already been sold to manufacturers who will exhibit chemical stoneware, porcelain, enamelware, etc. It is expected to make this a big event, and it is quite likely that there will be a meeting held at this time at which papers will be read, thus making it a very important gathering. At the exposition held last year, it was stated that there were about one hundred and fifty ceramists present at a luncheon which was conducted by the membership committee of this organization. This number compares well with the number of attendants at the regular convention.

PRESIDENT BROWN GIVES ANNUAL ADDRESS

It was not until after the reports of these various committees had been presented that George H. Brown, president of the Society for the past year made his presidential address. In his speech Professor Brown advocated a more centralized control for the Society, which he

A. F. Greaves-Walker, Vice-President Edward Orton, Jr., Past Secretary R. K. Hursh, Treasurer

OFFICERS OF THE AMERICAN CERAMIC SOCIETY AND ITS PAST SECRETARY

thought would make it stronger and capable of handling the growth and expansion of the organization which is now taking place. He also showed the urgent need of representation in the National Council of Defense. The need for greater co-operation between the manufacturer and the laboratory, he said, is necessary for greater development of the ceramic industries. Another point brought out in Professor Brown's speech was the important part played by the ceramic industries in the successful prosecution of the war.

PREPAREDNESS COMMITTEE REPORTS

A committee which has been doing very good work in helping the government in various endeavors which fell within the boundaries of the ceramic industries, is that on military and economic preparedness. This committee covered many different phases of the ceramic industry, each phase being headed by a man who was directly interested in that industry, and who had for his assistance other men from the same line of work. In the reports made by the individual members of this committee it was learned that in the porcelain industry, they set out to investigate the manufacture of spark plugs in three directions, in regard to design, improvement of the body of the plug, and substitutes. These investigations led to a much improved spark plug, which is now superior to that manufactured in any European country. The aeroplane engine spark plug especially was thoroly investigated and the improvement in its quality has been remarkable.

In the enamel ware industry, the members got together and helped the government by supplying material for signal work, and especial efforts were made to supply the army with its requirements in the lines of cooking and hospital supplies. Specifications and methods of testing were worked out so that the government could be guided in the purchase of all supplies in this industry.

In the abrasive industry a peculiar situation presented itself. The arbors on machines manufactured by different concerns vary in size to a great extent so that there is often difficulty met with in obtaining an abrasive wheel which will fit that particular machine. This committee is endeavoring to standardize the size of arbor so as to overcome this trouble. A sub-committee on traffic, whose duty it was to arrange for prompt shipments on abrasive material was appointed by the chairman of this committee.

The committee on refractories reported that they had the co-operation of fourteen government officials, one-half of whom were men connected with the navy department. Other reports such as on optical glass, chemical stone ware, and ceramic raw materials were also given. The latter committee has prepared a directory of dealers in raw ceramic materials. A preprint of this directory has been prepared and sent out to all members of the society.

On Tuesday evening, February 12, at 8 p. m., the councilors for the local sections and student bodies of the society, reported the progress of their respective chapters. All of the various student sections were reported as being hard hit by the war thru enlistment of their members into the army service. At the University of Illinois alone, twelve members were lost due to enlistment or draft. It was at this point that a motion was passed by the society that an honor roll be made up of students and ceramists who are now in army service.

COMMITTEE ON STANDARDS ISSUES PREPRINT

The committee on standards then followed with a report. The need of uniformity in conducting tests, in ceramic terminology, and in the classification of materials and products, has long been felt by this society, altho the work of the above committee has been along the lines of providing standard tests for various ceramic products. So far they have not had sufficient time to report on all ceramic materials, but it is expected that this work will be kept up until every product has had a set of specifications made up for the testing of its properties. During the past year this committee has been somewhat handicapped in not having a sufficient number to carry on the work in an extensive manner. However, this committee has now been increased from five to fifteen members so as to be able to do more comprehensive work along this line. A pamphlet, showing standard tests for some ceramic products which have already been worked out by this committee, is now being distributed as a preprint to the members of the society.

SOCIETY TO PUBLISH MONTHLY JOURNAL

One of the liveliest discussions of the whole session followed the report of the periodical committee, whose message concerned mainly the issuance of a prospective journal to be published monthly by the American Ceramic Society. Altho the name and special details of this paper are not as yet decided upon, it is quite certain that within the next six months members of the society will receive copies of a journal published along the lines of the Journal of the American Chemical Society. It will probably carry no editorial or news matter, but will contain the papers which would otherwise be contributed at the regular conventions and thus give the members the advantage of having access to this literature earlier than is now possible, when the papers are read at the annual meeting and then published later in the form of the Transactions.

The committee on rules advocated several important changes in the rules which have been found necessary in order to be in keeping with the growing membership, the local sections, and the new needs of the society. It is expected that most of these rules will become effective as soon as a vote is taken on those amendments which were advocated by this committee.

On Wednesday afternoon, February 13, the new president, Homer F. Staley, professor of ceramic engineering of the Iowa State College, upon assuming the reins of the society, gave a short speech in which he emphasized the necessity for the whole society to work in unison if it is expected to carry on its campaign for a bigger and broader organization, with success.

Owing to the fact that an unexpected business interruption detained him, A. F. Greaves-Walker, who is now connected with the American Refractories Co., at Baltimore, and who is the newly elected vice-president of the society, was unable to be present at this meeting.

SECRETARY INSTALLED FOR FIRST TIME

For the first time in the history of its organization, the American Ceramic Society installed its secretary. Professor Charles F. Binns, director of the New York State School of Clay Working and Ceramic, who is the newly elected secretary of the society enjoys this honor. When the society first organized, Professor Orton was made its secretary and has until his entrance into government service continued to remain in this position. Since there was no formal installation of officers at the first meeting and no new secretary elected, there has never been an occasion for a formal installation of a secretary until the present time.

Professor R. K. Hursh, of the University of Illinois, was re-elected to the position of treasurer. Besides the four officers named above, the board of trustees consisting of A. F. Hottinger, of the Northwestern Terra Cotta Co., Chicago, Ill., whose term expires in 1919; E. T. Montgomery, of the Jeffrey De Witt Co., Detroit, Mich., whose term expires in 1920, and R. D. Landrum, of the Harshaw Fuller & Goodwin Co., of Cleveland, Ohio, whose term expires in 1921 was chosen.

A new feature which occurred at this convention was the meetings at luncheon of the various local sections. The New York State and Chicago sections especially had a large gathering at their luncheons.

All but a few of the following papers were presented at this convention. They all proved to be very interesting and the members will await with anticipation their publication and distribution, either in the form of a journal, or as formerly, in the form of the Transactions of the American Ceramic Society.

Raw Materials, Their Occurrence, Refining and Testing

1

Natural Hydraulic Cements in New York, by Robert W. Jones, Albany, N. Y.

2

Some clays of the Pacific Northwest, by Hewitt Wilson, Columbus, Ohio.

3

The Occurrence and Mineralogy of Some Iowa Clays, by S. N. Galpin, Ames, Iowa.

4

Kaolin Deposits of Quebec, by Joseph Keele, Ottawa, Canada.

5

Florida Clays, by E. H. Sellards, State Geologist.

6

Residual Fire Clay Deposits in Western Idaho, by E. K. Soper, Cornwallis, Ore.

7

The Properties of Some Ohio and Pennsylvania Stoneware Clays, by H. G. Schurecht, Columbus, Ohio.

A. F. Hottinger

E. T. Montgomery

R. D. Landrum

MEMBERS OF THE BOARD OF TRUSTEES OF THE AMERICAN CERAMIC SOCIETY

8

Shrinkage in the Clay State and Its Relation to Dehydration, by T. A. Klinefelter and E. H. Fritz, Derry, Pa.

9

Some Physical Changes in Clays From Normal Temperature to Red Heat, by Charles W. Saxe and O. S. Buckner, Worcester, Mass.

10

A Method for the Determination of Air in Clay, by Harry Spurrier, Detroit, Mich.

11

The Nature of Occluded Gases in Clay, by Harry Spurrier, Detroit, Mich.

12

Some Methods of Measuring Plasticity, by Arthur F. Gorton, Toledo, Ohio.

13

The Plasticity of Clays and Limes by the Emley Plasticimeter, by F. A. Kirkpatrick, Pittsburgh, Pa.

14

The Effect of Electrolytes on the Properties of Clays, by H. G. Schurecht, Columbus, Ohio.

15

Topic for Discussion: Is the Purification of Low Grade Fire Clays Economically Practical? Discussion led by S. N. Galpin, Ames, Iowa.

16

The Influence of the Degree of Coagulation Upon the Physical Properties of Some Georgia Kaolins, by H. W. Douda, Haydenville, Ohio.

17

Some Experiments in the Hydration of Anhydrite and Dead-Burned Gypsum, by A. C. Gill, Ithaca, N. Y.

18

Note on Albany and Michigan Slip Clay Blends, by T. A. Klinefelter, Derry, Pa.

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Two Hundred Responded to the Banquet Call of Secttion Q, That Time-Honored Institution of the A. C.S.

FUEL INVESTIGATION *at a* STANDSTILL

Fuel Administrator Hits Snag in Complexity of Clay Products Industry and Endeavors to Pass Buck Back to Commercial Economy Board

By Waldon Fawcett

THE MONTH OF FEBRUARY, which was expected to see the entire brick and clay products industry nicely settled on a war basis, draws to a close without the readjustment any closer to a reality, seemingly, than it was a month ago when I reported the confusion induced by the initial conferences between war committees and trade representatives and executives of the United States Fuel Administration.

The conferences are yet going on—the sewer pipe people had a lengthy session in Washington only a few days ago—and government officials are as hard at work as ever endeavoring to devise a working basis, but it may as well be confessed that progress is slow.

In Washington on Wednesday, February 20, representatives of the face, common and paving brick industries again conferred with the officials of the U. S. Fuel Administration in an effort to arrive at some compromise with respect to the "rationing" of the industry or the treatment to be accorded the various branches of the brick industry in the administration of the "budget" system of fuel distribution. Altho the conference continued several hours, no conclusion was reached nor was any very definite progress made altho there was evidence of a better feeling in some quarters and brick manufacturers insisted their willingness and desire to do anything within reason to meet the wishes of the government as an aid to war-making. However, the Fuel Administration does not seem inclined to modify demands which some of the manufacturers continue to regard as too drastic and further negotiations will be necessary ere a complete understanding can be arrived at.

To get to the heart of the present situation right at the start it may be said that the Fuel Administration has not as yet issued any "orders" to any branch of the brick and clay products industry to curtail production. Neither has it issued any "requests," which is a more polite way of bringing about the same sort of conservation. The Fuel Administration, be it understood, is the branch of Uncle Sam's war-managing machinery most directly in touch with the clayworking industry because, in the interest of a conservation of coal and likewise of relief of the pressure upon railroad transportation, it falls to the lot of the Fuel Administration to "ration" any industry that is to be rationed. However, the Fuel Administration officials are plainly "stumped" by some of the difficulties that confront them in this particular quarter.

The plain truth of the matter is, as has been confessed to me by some of the men at the helm of the Fuel Administration, that when Administrator Garfield's aids undertook to revise existing production arrangements in the brick and clay products industry they had no conception of what a complex responsibility they took on. The officials admitted, for instance, that they were amazed when they found that every one of the many different classes of brick must be treated as a separate and distinct proposition when it came to readjusting production. So it has been all thru the industry. It has been brought home to the officials at Washington that not only can there be no broad applications of the principles of conservation, but that no hard and fast rules can be made.

REQUESTS, NOT ORDERS, TO BE ISSUED

This then is the secret of what must appear to an outsider a sudden slowing down of the whole program with reference to the industry. It is intimated to me that ultimately "requests" will be issued to certain branches of the industry where "orders" were expected and it is more than likely that no instructions whatever will be forthcoming where it seems impossible to reconcile the ideas of the manufacturers and of the Fuel Administration as to what degree of conservation should be practiced.

To indicate how slowly things are moving, or how they are, it might be almost said, "marking time," it is only necessary to cite that the Fuel Administration has not even reached the sticking point in endorsing a trade policy for the producers of hollow tile. It will be recalled that it was understood that it was as good as settled that the hollow tile manufacturers were to be asked to curtail production only 25 per cent. whereas brick producers were asked to make a cut of 50 per cent. This was what precipitated the original clash in the negotiations. Yet here we have the hollow tile proposition yet hanging fire.

Judging from the letters that are coming to Washington, I suspect that there must be more or less mystification with respect to the "exemptions" that have been authorized by the Fuel Administration—this being, it may be added, the one angle of this many-sided proposition in which definite action has been taken. Aside from telling the manufacturers of refractory brick not to think of curtailing production, but to manufacture as many brick as they can, the Fuel Administration has taken no action of this kind on its own responsibility, but only on the initiative of the Food Administration. That is to say, the Fuel Administration is granting full immunity for unrestricted production only in the case of classes of clay products in whose behalf the Food Administration has intervened and the Food Administration is, of course, concerned only with utilities that have to do with food production. This is the explanation of why exemption has been granted to the manufacturers of drain tile, drain tile being needed to insure maximum agricultural production. Similarly we find a free hand given, at the behest of the Food Administration, to the manufacturers of tile for silos and to producers of jugs, jars, etc., that serve as receptacles for food products, especially the classes of containers used in canning, preserving, pickling, etc.

BUCK PASSED BACK TO ECONOMY BOARD

One phase of the effort at Washington to place the clay products industry on a war basis that may appear amusing to those who have a keen sense of humor is found in the sudden right-about-face whereby certain extensive sections of this undertaking are to be turned back, as it were, into the hands of the Commercial Economy Board. It will be recalled that this whole movement to place the brick and clay products industries on a war basis originated in conferences between the manufacturers (who were anxious to meet the government half way in any desire it might have) and the Commercial Economy Board, a branch of the Council of National Defense. The Commercial Economy Board had been busy encouraging economies in various lines and it was felt that similar economies could be accomplished in the clay products industry if producers could be gotten together on a common ground of agreement whereby unprofitable lines or superfluous sizes, etc., would be eliminated.

The Commercial Economy Board, however, after lookinto the subject pretty thoroly, came to the conclusion that "reforms" in the clay products industry did not properly come under its jurisdiction, and so they passed the matter along to the War Industries Board, from which it gravitated to the Fuel Administration.

Now the officials at the Fuel Administration, finding that they have a hard nut to crack, are disposed to shift a large share of the responsibility back to the Commercial Economy Board. The Fuel Administration officials tell me that they have come to the conclusion that in many branches of the clay products industry whatever is attainable in the way of sacrifices to war needs may best be accomplished thru standardization of products and elimination of odd sizes and unnecessary styles. Hence the new move of the past few days is to have all clay products problems, that may be, "respectfully referred" to the Commercial Economy Board. The sewer pipe manufacturers, the latest contingent within the industry to journey to Washington in order to determine their war-time status, have thus been referred from the Fuel Administration to the Commercial Economy Board.

LAST MINUTE NEWS *of* 2nd FUEL CONFERENCE

SINCE the above information was received from our Washington correspondent, more details concerning the conference with the Fuel Administration on Wednesday, February 20, at Washington, D. C., have developed.

As has already been mentioned, in accordance with the undertsanding that a further conference with P. B. Noyes would be had as soon as the joint committee representing the face, common and paving brick associations could discuss with their constituents the possibility of coal saving by standardization, the elimination of unnecessary shadings and gradings, as well as pooling, in addition to direct curtailment by specific percentage decrease in production, the following gentlemen met in Washington, on February 19:

THOSE WHO ATTENDED

For face brick, Messrs. George A. Bass, F. W. Butterworth, S. C. Martin, H. E. Stringer and R. D. T. Hollowell; for common brick, Messrs. William Schlake, Warren Griffiss, C. A. Noll (representing Oklahoma manufacturers), J. H. Payne and C. W. Martin (representing Texas manufacturers). As will be seen, the above-mentioned gentlemen represented the face and common brick industries. They spent the entire day of the 19th in an endeavor to formulate joint suggestions for fuel conservation along the lines desired by the Fuel Administration on January 19.

RECOMMENDATIONS OF JOINT COMMITTEE

After mature consideration, the joint committee thru its chairman, Mr. Butterworth, submitted the following recommendations to Mr. Noyes on the morning of February 20:

1. We recommend that in the manufacture of common and face brick the consumption of fuel be reduced 33⅓ per cent. as compared to the amount consumed in 1917. In exceptional cases in which plants suffered severely in 1917 on account of fuel, labor and transportation conditions, the administration should permit the estimate of curtailment to be based on the manufacture of 1916. Also, in cases where plants have changed or can change their output to fire brick or clay products other than common and face brick, the amount of curtailment of fuel should only be to the extent of the regulations applying to those particular lines.

2. That this curtailment be made daily, periodically, or by shutting down individual plants where a concern operates more than one, at the option of the manufacturer; that credit for curtailment from January 1, 1918, be given.

3. We recommend that this order be universally enforced irrespective of the kind of fuel used.

4. That the Fuel Administration enforce corresponding curtailments upon all competitive materials.

5. Decreased production means increased costs. We believe, however, that if the government will sanction pooling in production and distribution, in localities where conditions would so justify, a considerable saving may be effected thereby.

6. The above suggestions are based upon present conditions and are made with the understanding that if conditions change, further conference will be held.

NOYES' VIEWS ON CONSERVATION CHANGED

It was evident from Mr. Noyes' reception of these suggestions that the Fuel Administration's views on coal conservation in the brick industry had materially changed since the last interview. Mr. Noyes in addressing the joint committee, began his talk by stating that the Fuel Administration was considering the advisability of giving priority for fuel to factories which consume the least fuel in the production of specific commodities. He said he understood there was a wide variation in the amount of fuel necessary to burn one thousand brick on different plants—in some cases as much as 100 per cent. He stated he wanted aid in making a complete classification along this line, and assumed the United States Bureau of Standards might be made available for such a survey. He stated, furthermore, that the business of killing in war related not only to the soldiers

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ANNUAL MEETING of the N. B. M. A.

One Hundred and Sixty-Five Clay Products Manufacturers Attend Convention of Common Brick Makers at the Hoosier Capital on February 13, 14 and 15

IN ALL about one hundred and seventy-five men engaged either in the manufacture or sale of clay products registered with the secretary of the National Brick Manufacturers Association between Monday and Friday, February 11 and 15, over which period the convention at the Claypool Hotel at Indianapolis, Ind., extended. Whether it was due to the fuel situation, car shortage, labor troubles, or simply a lack of interest that the attendance was not larger, is hard to state. However, had it not been for the presence of a large number of machinery manufacturers' representatives and members of the American Ceramic Society who were attending a meeting of their organization at the same hotel, the meeting would have looked more like a state convention rather than a gathering of an organization supposed to represent one of the greatest industries in the United States.

OFFICERS ELECTED FOR COMING YEAR

The convention proper opened on Wednesday afternoon, February 13, with a prayer by the Rev. S. C. Wicks, of Indianapolis, Chaplain Frank C. Houston, of Indianapolis, author of several patriotic songs then led the audience in singing "America." The address of welcome was then given by Hon. C. W. Jewett, Mayor of Indianapolis, who delivered a very interesting speech most of which dealt on the war in Europe. Following the response to this address, John W. Sibley, who has guarded the treasury of the N. B. M. A. for a long period gave his financial report.

Election of officers followed the reading of the above report and the usual custom was observed of moving up the vice-presidents and electing a new vice-president to fill the vacancy left by the third vice-president who becomes the second vice-president. The officers for the following year are:

President: George H. Clippert of Detroit, Mich.
First Vice President: J. W. Robb of Clinton, Ind.
Second Vice President: W. K. Hammond, of New York City.
Third Vice President: W. E. Dunwody, of Macon, Ga.
Secretary: Theodore A. Randall of Indianapolis, Ind.
Treasurer: John W. Sibley of Birmingham, Ala.

The report of the committee on technical investigation, which was to have been given by Major Edward Orton, was made by A. V. Bleininger, Director of the United States Bureau of Standards. Major Orton, who is now stationed at Washington, was unable to attend this meeting. Reports of other committees then followed.

It was learned that the Western and Southern Paving Brick Manufacturers' associations have amalgamated with the National Paving Brick Manufacturers' Association, the decision being made at a meeting held recently in Cincinnati, Ohio, at the Hotel Sinton. While the members of these associations have been identified with the National organization as individuals, the association as such, were not connected with it in any manner. The amalgamation was ratified at a board meeting of the National Paving Brick Manufacturers' Association during the early part of the week.

Altho a very good program of papers had been prepared for this convention less than half of the parties who were on the program appeared, hence the list of good papers read were limited to a very few.

RESOLUTIONS ADOPTED

On Friday afternoon the following resolutions were presented to members attending the convention, as drawn up by a committee of which M. E. Gregory was the chairman.

First, a committee was recommended to act with the president and secretary of the association in arranging for the program of papers to be read at future meetings. It is hoped that by this arrangement that a higher caliber program could be arranged.

The essence of the second resolution was that a committee be appointed on operating plant efficiency. This committee is to investigate means of increasing the efficiency of a clay plant with the means and equipment already on hand without the addition of new expensive machinery.

A third resolution recommended that a committee on publicity be appointed. It was advocated that this committee draw up plans for a wide publicity campaign for advertising brick.

The last resolution advocated a committee on membership. It is hoped to put forth a strenuous campaign for new members and double or treble the present membership by the next meeting. Men interested in all lines of clay products manufacture will be approached and asked to support the N. B. M. A.

SOCIAL EVENTS WELL ATTENDED

The social events held this year were a smokerette on Tuesday evening, which was held in the convention hall, a theatre party on Wednesday evening, and a banquet on Thursday evening. These events were very well attended considering the number present at the convention. The main speaker for the banquet was Hon. William C. Redfield, Secretary, Department of Commerce, Washington, D. C.

SOUVENIRS DISTRIBUTED

Following is a list of souvenirs distributed by manufacturers who attended the meeting of the National Brick Manufacturers' association:

American Clay Machinery Company, Bucyrus, Ohio, was there as usual with some very useful and novel gifts among which were the following: A memorandum book containing quite a lot of useful information and maps and with space for memoranda thruout the year; they also handed out colored pencils and red, white and blue lapel buttons, a very useful little booket entitled Convention Notes, and a carpenter's folding rule.

The Bonnot Company, of Canton, Ohio, gave a very attractive and useful pocketbook.

The J. D. Fate Company, Plymouth, Ohio, gave out a shellshaped combination pencil and pen. It was intimated that the Kaiser could use the pen to sign his acknowledgement of defeat.

E. M. Freese & Company, Galion, Ohio—Tan covered folding pocketbook of flexible leather with silk lining.

The International Clay Machinery Company, Dayton, Ohio, attracted much attention with a metal pencil that was greatly in demand. The usefulness and character of this gift was quite in keeping with "International Service."

Manufacturers Equipment Company, Dayton, Ohio—Something everybody wanted, a leather key ring holder to protect one's pockets.

Scandinavia Belting Company, New York City—Small nickel-plated folding pencil that was camouflaged to look like one of the shells that the American artillerymen are shooting at the Kaiser.

The Stevenson Company, Wellsville, Ohio, made visitors happy by giving to them a very useful combination bill fold and pocket book, also a pencil.

Thwing Instrument Company, Philadelphia, gave a very handy manual for engineers.

The Wellington Machine Company, Wellington, Ohio, represented by Mr. Strickland, made this company's friends happy with a pencil.

* * *

An Attractive Brick Display Room

On the second floor of the new Lehmann building, which is a twelve-story office building faced with "Hy-Tex Blackstone" brick, and terra cotta manufactured by the Northwestern Terra Cotta Co., is located the display room and office of Dering & Oliver Co., of Peoria, Ill.

This practical and artistic display room contains about six thousand face brick, laid up in mortar in all known bonds, mortar joints in thickness and color best suited for the brick. The room is right over the main entrance of the building, immediately in front of the three elevators, clear glass corridor windows allowing a full view of the displays from the elevators, and four large outside windows giving a good natural light to the exhibits.

The brick panels, shown in the illustration, represent the brick just as an ordinary brick mason would lay them in the wall, and in addition to these wall panels, the room contains moveable panels, also racks, for individual samples.

The display room is finished with an oak floor, covered with a taupe velvet rug which with the green wicker chairs, bay trees, artificial flowers and overdrapes at the windows, makes it look very cosy and homelike. The grate in the mantel contains an artificial fire, which shows up particularly well on dark and gloomy days, and creates favorable comment from the elevator passengers as to the cosy appearance.

A Portion of the Attractive Face Brick Exhibit at the Offices of the Dering & Oliver Co., Peoria, Ill.

The Dering & Oliver Co.'s line consists of the product of the Hydraulic-Press Brick Co., Brazil Clay Co., Decatur Brick Mfg. Co., LaSalle Pressed Brick Co., and the Northwestern Terra Cotta Co., as well as several other small lines of building material.

* * *

Texas Pledges Support

At a conference of brick manufacturers of Texas, recently held in Dallas, a resolution was adopted offering the federal government the unreserved support of all manufacturers of burned clay products in that state. A committee composed of A. E. Eaton, R. F. Williams, J. R. Martin, M. G. Almond, T. J. Butler, W. R. Bennett, P. E. Miller and W. B. Fraser was appointed to draft the resolution and forward it at once to Dr. H. A. Garfield, Federal Fuel Administrator. Thirty-three men attended the conference.

The conference was called to discuss readjustments in the manufacture of brick in Texas which will probably come about by the priority order on fuel recently issued by the fuel administration.

It was pointed out that the government has called on the manufacturers of burned clay products to assist in saving 50,000,000 tons of fuel in the country during 1918 as compared with 1917, which will necessitate a material reduction in the production of tile and brick in Texas, as elsewhere.

W. R. Bennett, who recently visited Washington, reported in detail on the action desired of brick manufacturers by the fuel administration, after which the resolution was passed.

The delegates decided to subordinate all matters of personal and individual interest to the needs of the country, and appointed C. W. Martin and J. Howard Payne as Texas representatives to a convention of all brick manufacturers of the country to be held in Washington February 20.

The Texas brick men will not ask to be exempted from the fuel priority order, deeming it unpatriotic to do so.

STAGES *of* BURNING *in* DOWN DRAFT KILNS

In a Plain, Untechnical Manner, the Basic Principles of Burning Are Outlined in the Following Article, which Embraces Many Constructive Suggestions on Firing

Staff Article

EDITOR'S NOTE: *To augment the value of the several articles on burning which appear in this issue, we have prepared this expository article on the process of burning, culling from past articles appearing in Brick and Clay Record the points which it covers. It deals not with the composition of clays, the construction of kilns, nor with the chemical and physical changes which take place during burning, except where these elements have a direct influence upon the heat control. Its main purpose is to describe the stages of the burn and the method of controlling the temperature at those stages to produce the desired results; and to assist the man on the shovel as well as the man at the helm to a better understanding of the basic principles of burning so that better results may be obtained.*

IT IS OBVIOUS that the first place where heat control enters into burning is during the watersmoking period. Too often watersmoking is treated as a necessary evil, and is either finished hurriedly or carried at too high a heat, in order to hasten the operation. This period may properly be called the preparatory period, during which it is necessary to prepare the ware to later on receive and uniformly absorb the heat that is to be applied.

Theoretically, all the water will be expelled at 212 deg. Fahr., which is the boiling point of water, but actually it requires from 300 deg. to 400 deg. Fahr. to drive out the last trace of pore water. An idea of the actual work to be performed in this watersmoking period may be gained if we consider the amount of water actually contained in the dry ware set in the kiln. Presuming that there are 80,000 brick in kiln, and that each brick contains a half pound of moisture, the amount of water that is to be carried off approximates twenty tons; and this is in addition to the water vapor that is carried into the kiln in the air, and that which is produced by the combustion of the fuel.

INCOMPLETE WATERSMOKING

The error of incomplete watersmoking is cumulative. For instance, if the fires are built up before one or more sections of the ware are as dry as the surrounding material, this wet ware advances or matures always a few hours behind the ware which has been prepared for high heat treatment by being thoroly dried during the watersmoking period; a differential flow of the gases is created, the highly heated gases flowing around the wet sections instead of being brought down uniformly thru the entire horizontal cross-section of the kiln.

If the clay is impregnated with carbon or sulphur or both, it is evident that these impurities will be burned out or oxidized in the material that was wet, after the balance of the setting is oxidized (and therefore ready to receive high heat), resulting in swelled ware. Ware cannot oxidize, it cannot dehydrate, it cannot absorb and gain in heat until it is dry.

Even tho the clay does not contain impurities, it is usually the case that the ware in those sections which were delayed in drying is not burned as hard as the surrounding material, or is "off color."

If the top is dried and the bottom wet, the top will mature too soon, and the results are an overburned top and a matured bottom, or a mature top and an underburned bottom—usually the latter.

It is a common occurrence, also, to find that the ware not dried is later on forced to take heat too fast, and that checked or cracked ware results.

These are the indirect results of incomplete watersmoking.

FAST WATERSMOKING

If the kiln is fired too hard at this stage of the burning, so much steam is generated that the stack is not able to carry it off, and the moisture condenses on the bottom ware, causing it to soften, so that the load above crushes it. The actual loss here may not be great if the ware crushed does not spread out and cover up the floor perforations, yet the crushed ware is a tangible, actual loss and can be prevented. When perforations are closed from crushed ware or other causes (such as chips or careless setting) it checks the draft and automatically causes a differential flow of the gases away from the floor sections where the perforations are closed, with the identical result outlined in the previous paragraphs.

Another direct result of watersmoking too fast is "sooting," which is caused by the excess smoke becoming heavy with moisture and depositing the wet suspended carbon on the lower courses of the ware.

The use of coke or wood is advisable during this period if either can be cheaply obtained. This is particularly advisable when burning dry-pressed ware.

Still another result of fast watersmoking is checked, cracked and shaky ware, depending on the tenderness of the clay, fineness of grain and density of the surface skin. This is especially true of paving-brick and undoubtedly a lower rattler test would be obtained in some instances, if more care were taken in drying the pavers.

WATERSMOKING TOO SLOW

If the kiln be watersmoked too slowly, the stack does not become heated up and consequently does not draw, the result being that the steam lingers in the bottom of the kiln and causes softening in the ware.

The danger here is that the fires will be built up at the end of a stated length of time (usually two days) and obviously before the ware is dry, resulting in later difficulties as outlined in the previous paragraphs.

Watersmoking too fast and too slow are prime causes of scum on the bottom ware. Much of the steam that is not carried away (in both cases) condenses on the ware, sulphur gases deposit their acids on this wet ware, the soluble alkalies in the clay have more chance to travel to the surface and scum is the result.

A medium must be established that will dry the ware safely and quickly.

THE WATERSMOKING FIRE

A clean fire (not smoky) and having a flame not to exceed one foot in length is recommended, and this fire should be built at the back of the pocket, not in front, using an open pocket. It is an excellent plan to hang sheet-metal over the top half of the front of the fire-box in order to direct the draft over the bed of coals. If the fire-box is equipped with doors, close the firing-door and open the ash-door wide. Don't use grate-bars in slant grate furnaces until the start of the heating up stage. If equipped with horizontal or shaking grates, the water-smoking fire may be built on the grates at once.

The maximum heat should not exceed 400 deg. Fahr. and should be regulated with a watersmoking thermometer.

Of course, a good draft is to be desired, but at this period it is difficult to obtain. Build a fire in the stack to facilitate it, and use every possible effort to encourage the draft. Plaster with mud every place where there is any chance for the leakage of air, including top, doors, sidewalls and opening into the stack at damper.

TEST FOR DRYNESS

In order to approximately know when the kiln is dry, insert a cold, dry iron rod into the bottom peep-hole, along the floor of the kiln, and keep it there for from thirty to sixty seconds; any moisture in the kiln gases will collect on the cold rod, if the kiln is not dry. The same procedure can be followed by placing the cold rod in the flue leading to the outside stack, but the reading here is not correct, as this indicates also the degree of moisture in the bottom flue work of the kiln, and is not indicative of the condition of the ware.

Time can be gained, coal can be saved and better ware produced, if the watersmoking period is handled as a distinct period, with a definite object in mind—to safely and thoroly dry the ware.

THE DEHYDRATION AND OXIDIZING PERIOD

This period is a division arbitrarily named for the sake of convenience; it includes that period between watersmoking and incipient vitrification, although no definite fixed points can be assigned that separate one from the other. They overlap, and in commercial operation it is a practical impossibility to entirely separate them, inasmuch as the top is heating up while watersmoking is still in progress in the bottom, and in the next period the top may be vitrifying while the bottom is heating up.

The primary object is to get a heat in the bottom of the kiln—to "clear it up" without overburning the top—and at this point the first real difficulty in the control of kiln temperatures arises. Before proceeding to the vitrification stage, the burner must accomplish the following.

1: He has to secure a heat on the bottom that is practically the same temperature as that in the top. 2: To prevent settle and vitrification in the top ware. 3: To dehydrate the clay and to oxidize all carbon, sulphur, and iron in both top and bottom ware, if any be present. 4: To make the kiln a collector of heat, and to force it to absorb and retain from the enormous amount that is passing thru the kiln to the stack, sufficient heat to mature the ware. 5: To do all this with a minimum expenditure of coal, labor and time—principally time.

We are tempted to say here, that during this period *there is no limit to the amount of heat that may be poured into a kiln so long as it does not settle.* It is true perhaps, in the great majority of cases, as in shales and fire-clays containing excessive carbon, carbonates and sulphur, there is a point at which it is best to hold the temperature until these impurities are burnt out or oxidized.

The temperature accepted as being most efficient in causing carbon to completely oxidize is approximately 1,500 deg. Fahr. One-half of the sulphur is burned out at about 950 deg. Fahr., the balance at a temperature between 1,600 deg. and 1,700 deg. Fahr. The combined water is driven out at about 1,200 deg. Fahr. and the decarbonization of iron carbonate, calcium carbonate, magnesium carbonate, and dolomite is accomplished at temperatures variously estimated below 1,700 deg. It is evident also that the speed of dehydration and oxidation is directly influenced by the density of the ware. For instance, soft-mud, dry-press and stiff-mud wares offer increasing difficulties to speed oxidation in the order named. It is evident, then, that the statement must be completed by adding the qualifying phrase—and as long as the clays do not contain an excessive amount of impurities.

There are other exceptions, in which the ware will crack and pop if heated too fast, particularly is this exception true of fine grained clays and of ware the surface of which is made very dense by die pressure.

Before the oxidation or heating up period has been successfully completed, two main points will have been accomplished—first, the material being burned will be free from impurities such as carbon and sulphur and oxidation completed, and second, the kiln will be "clear" on the bottom, which means that a bright heat will have been obtained in the lower courses of ware on the floor.

If the clays do contain impurities and the first point is accomplished, the second point is automatically secured. The first point applies to all clays that contain impurities and where the point of maturity is carried beyond the first or condensing stage to complete vitrification. The second point includes all clays. This prepares the clay so that we may safely proceed with vitrification and maturity, for if vitrification is started before the clay is completely oxidized, the results will be disastrous—black spongy cores and swelled ware is inevitable.

There are two simple methods for determining when the carbon and sulphur have been expelled; one is to watch the stack (or stacks) and note the final disappearance of the blue smoke and the other is to draw trials from both top and bottom peep-holes, break them thru the thickest section and note when the last of the dark center core has been eliminated. Both methods should be used.

BLUE SMOKE

There are soft brick in the kiln as long as there is blue smoke coming from the stack. An analysis of the statement proves it true. The blue smoke indicates that the ware has not yet been prepared for vitrification, that the ware is still porous, that carbon and sulphur still exist in the ware and that it is not yet safe to raise the temperature.

Trials should be drawn from both top and bottom, broken open and examined for core on the inside and for traces of incipient vitrification on the outside shell or surface.

Govern the fires so that surface vitrification does not start, and take measurements often with the settle rod or be sure that settle has not started, otherwise the surface or skin will vitrify, pores will be sealed up and the gases caused by the oxdization of the carbon and the sulphur cannot escape and the continued generation and pressure of the gases confined within the sealed surface or skin causes the ware to bloat and swell out of shape.

Inasmuch as no gases can escape, it follows that no oxygen can get in and, without going into a discussion of the "role played by the iron," it is sufficient to say that the nature of the iron content is changed radically, due to a lack of oxygen and the inside mass melts and fuses at a lower temperature than the surrounding clay, causing the familiar spongy texture noticed in the fracture of a broken swelled brick.

Quite often pockets of swelled brick are found in the heart of the kiln, surrounded by sound brick. This is undoubtedly caused by these brick being set wet, or in some other manner delayed in drying and oxidation and therefore not ready to vitrify with the balance of the kiln.

When the trials drawn from the floor show that the core has practically been eliminated, then it is safe to proceed and secure a vitrifying heat.

SETTLE

A very peculiar phenomenon has frequently been noticed that occurs with many clays, which has been of considerable help to him in determining when the kiln is almost ready to settle. Just preceding settle, the kiln will rise, and the greater the rise the more chance there is for a uniformly hard burn on the floor of the kiln. The author believes that the kiln should never be fired so hard that settle sets in before the rise is secured.

Observations on this point have been limited, but the author is inclined to think that the rise is due to the expansion of the mineral structure when exposed to heat. The fact that a strong rise presages a good bottom burn means simply that the bottom and top are heated uniformly and therefore the bottom ware is expanding (due to heat) and is contributing to the rise; the inference being that a high rise indicates a kiln uniformly heated and consequently ready to uniformly settle or vitrify. Sometimes a rise of one-half inch is noted, although it is difficult to determine the rise as the crown also rises. Rises of one-quarter to three-eighths of an inch are common.

The original settle record should be taken immediately at the close of the water-smoking period.

THE VITRIFICATION PERIOD

From a practical standpoint, this period extends from the time at which settle or shrinkage starts, up to and including maturity, which is the condition in which the ware is commercially best.

The clay softens and shrinks in proportion to the amount of heat that is applied and the percentage of flux present. New silicates are formed and the body passes from a porous, spongy structure to a dense, hard, tough material after cooling. A fracture shows that the tendency is towards a glassy condition, depending upon the degree of vitrification.

The degree of maturity varies greatly in different clays and wares. Paving-brick and sewer-pipe, for example, require a higher degree of vitrification than face-brick, and face-brick in turn requires a higher degree of vitrification than common-brick or hollow ware, which are rarely vitrified.

At the end of the oxidation period, a uniform distribution of heat will have been secured in the kiln from top to bottom, and the problem is to increase this degree of heat on the floor of the kiln without overburning the top, and to bring it to such a temperature as will mature the bottom.

The bed of coals in the furnace has been carried thin and it is now advisable to slightly thicken up the fires and proceed more rapidly.

Do not make the twin mistakes of firing too light or trying to force the finish, but rather proceed with the previous tactics of making the kiln a collector of heat and then bottling it up by using the damper.

The damper should be as low as possible, still maintaining a slow, languid draft thru all furnaces.

If the draft is too strong, it simply pulls away all accumulated heat and burns up an enormous amount of needless fuel, and, on the other hand, if the draft is stagnant, a local heat only is secured in the top half of the kiln, causing the benches to split and roll, resulting in an overburned, kiln-marked top and an underburned bottom.

In conclusion it may be said that we need all the information we can possibly obtain, on progress of the kilns being burned, in order to be successful; and to be successful is worthy of our very best efforts.

Draw *trials* frequently as the kiln nears a finish, to determine the work being done. Study *heat colors* so that you can determine by sighting into the furnaces and peep holes, heat advance or loss. Take *settle records* frequently to determine rate and amount of settle. Use *cones* to determine work accomplished—and last and most important of all, use a *pyrometer,* that you may determine the progress of the heat at every stage of the burn, that you may be able to duplicate good results and avoid poor results.

It is possible to successfully determine the finishing point of a burn by any one of the above methods, but the chances for a successful "closing out," are slim indeed, when compared to the use of all five points. Do not tie to any one method, but endeavor to become efficient in all.

A burner is the real producer; if he will with enthusiasm make an effort to dig into and master each single phase of his own individual burning problems, he will become efficient, and efficiency is—just makin' good.

MORE COMING

We intended to include more burning articles in this issue than appear, but the large amount of other important material which developed made it necessary to cut the original schedule of burning articles in two, and save the other half for next issue. There will be two good ones on coal firing and one on producer gas; in addition to these, there will be published another article by Mr. Karzen on the "Construction of a Sewer Pipe Kiln."

LIGNITE *as a* FUEL *for* CERAMIC KILNS

Clearly and Comprehensively Are the Possibilities of Using Lignite as a Fuel for Burning Indicated in the Following Authoritative Article, Which is, We Believe, the Most Valuable and Complete Ever Published, and Which Covers for the First Time the Actual Procedure Followed

By W. D. Richardson

Superintendent of the Hebron Fire and Pressed Brick Company, Hebron, N. D.

TWO FACTS in regard to lignite are so little known or appreciated that they should be given prominent exposure in this series of articles: First, that lignite is one of the large and important fuel resources of the United States: Second that American lignite, when properly applied, is an excellent fuel for the burning of ceramic products.

As to the extent of lignite deposits, Prof. E. J. Babcock, in Bulletin No. 89 of the Bureau of Mines, says "The work of the Bureau of Mines, the United States Geological Survey, and the various State Geological Surveys is disclosing an increasingly large area underlaid with this kind of coal. Among the states having the largest workable deposits are North Dakota, Montana, Wyoming, Colorado, and Texas. In North Dakota alone it is estimated that the deposits cover approximately 32,000 square miles, many of them being 10 to 15 feet thick and capable of producing in all several hundred billions of tons of lignite." This is more than double the area of coal in the state of Pennsylvania and is enough, Prof. Babcock states, "to supply every family in the United States with 10 tons a year for over 100 years."

It is the purpose of this article to give some information of the character of lignite, to briefly describe some of the methods of burning lignite and, especially, to show from the writer's own experience the value of this fuel for the burning of ceramic products.

Lignite is the most recent, the most immature of all our formations, having, as its name implies, the woody structure, recognized in its appearance or in chemical tests. Much of the American lignite, however, lacks the physical characteristics of the true lignite or brown coal of Europe and is much superior to it. Our western lignites are often almost black, with a semi-luster, resembling cannel coal in appearance, but in the large content of moisture, in slacking when exposed to the atmosphere, in the burning and in the character of the gas, the residue, and other by-products its classification as lignite is revealed.

The chemical properties of western lignites from different localities vary somewhat. Babcock gives the average composition of dry samples as free carbon fifty-one per cent., volatile matter thirty-nine per cent., and ash ten per cent. The moisture in the lignite, as mined, is from fifteen to forty per cent. The moisture contained in the North Dakota lignite, as mined, is from twenty-five to thirty-five per cent. A large part of this moisture escapes rapidly when the lignite is exposed to the atmosphere, especially on a warm day, causing checking of the lumps and after a time, producing slack. German lignites contain when freshly mined about sixty per cent. of water.

It is the high content of water and the slacking on exposure that prevents lignite from being shipped to distant markets and confines its use to localities near the mines. If this obstacle could not be overcome it would probably result to the advantage of those states or localities having these lignite deposits, as it would attract to these localities many manufacturing industries that would be of greater permanent benefit to them than any revenue that could come from the mining and shipping out of this valuable fuel. Already some of these northwestern states have been settled and agriculture and other industries developed to a much greater extent than would have been possible had it not been for this fuel resource. In North Dakota especially, where there are no trees, the early settlers could not have secured other fuel, even where there were railroads, since they could not have paid the price. Hence it was a godsend to them that they could dig coal from the hillsides on their own or on a neighbor's farm.

TABLE NO. 1

	Moisture Per cent.	Volatile Matter Per cent.	Fixed Carbon Per cent.	Ash Per cent.
As mined	33.5	25.5	35	6
After 14 days' exposure	12.52	34.83	46.05	7.6

ATMOSPHERIC DRYING OF LIGNITE

For domestic use or for use in ordinary boiler or kiln furnaces the large percentage of moisture in the freshly mined lignite reduces the heating value of the coal and when the water is evaporated the lumps break down and slack, making it too slow burning in such furnaces for efficient results. Breaking up of the large lumps as they come from the mine seems to retard the slacking. If the lumps are exposed a few days to the atmosphere they will become so full of cracks that any attempt to break them results in a multitude of fine pieces too small for the grates.

Babcock conducted systematic tests of the effect of the exposure of lignite to the atmosphere in the month of August, making determinations every third or fourth day of moisture, volatile matter, carbon, ash, and heating value. These tests are summarized in Table No. 1.

After 14 days there was practically no reduction in the moisture content.

HEATING QUALITIES OF LIGNITE AND BITUMINOUS COAL

In order to determine the heating and evaporative power of North Dakota lignite, Babcock conducted elaborate experiments on samples weighing several hundred pounds taken from a number of mines. These results were compared with the results of similar tests of a high grade of bituminous coal, a selected lot of screened Youghiogheny. The results of these tests are tabulated in the government report, Bulletin 89, as shown in Table No. 2.

If the bituminous coal used as a standard in these tests had been the average Ohio or Illinois coal the result would have been surprising to those who have not used lignite fuel. A careful study of these tests, however, should convince anyone that these lignite deposits are a valuable asset and destined to become an important factor in the future industrial development of our country.

LIGNITE FOR CERAMIC KILNS

With the above introduction the reader is prepared to consider intelligently such argument or evidence as may be presented on the question of the adaptability of lignite for the burning of ceramic products. In the treatment of this subject we will confine ourselves to our own experience of the past two years in the management of the plant of the Hebron (N. D.) Fire & Pressed Brick Co.

The Hebron factory is a combined stiff-mud and dry-press plant, the dry-press and stiff-mud machinery being in separate buildings adjoining an elaborate clay preparing and clay storage building between them, common to both processes. The products are high-grade face brick manufactured by the dry-press and stiff-mud processes, and hollow building tile. The kiln equipment consists of six down-draft kilns, inside dimensions 18′ x 60′ x 8′ high from floor to spring of crown, or 14 ft. from the floor to center of crown, and a Richardson producer-gas continuous kiln of 12 chambers, each having inside dimensions 18′ x 43′ x 10′ from floor to center of crown. The fuel used is lignite mined on the property by the brick company, the drift entry being only a few hundred feet from the clay bank.

It may be said in passing that this lignite fuel is used also in generating steam in two boilers for a steam turbine having a direct-connected 300 K. W. alternator. These boilers also furnish steam for gas producers and for various other uses on the plant and are operated with this fuel to the limit of their rated capacity, 140 lbs. steam pressure being carried. As the boiler furnaces are not special in any way this steam plant shows what can be done with the North Dakota lignite, even under unfavorable conditions, by hard hand-firing.

FIRING PERIODIC KILNS

The furnaces of these rectangular down-draft kilns are of the ordinary type, such as were commonly built up to about twenty years ago, entirely outside of the kiln wall, 3′ x 4′ inside dimensions, horizontal grate bars and sliding firebrick doors. The method of operating them under high fire is as follows: The grates are of herring-bone pattern, are cleaned with a long chisel bar and the clinkers raked out. This leaves the grate bare and the furnace practically empty. Then the furnace is recharged by two firemen as rapidly as possible, lumps are thrown on the grate by hand and then the furnace filled with about twenty shovels of coal. This means, of course, that for a period the temperature of the furnace will be much lower, not only from the cooling off in cleaning and firing, but from the loss of sensible heat due to the evaporation of the water in the lignite, but in a short time combustible gases are distilled off, most of which in passing thru the hot body of brick in the kiln meets with enough oxygen to be consumed before reaching the bottom. Later, oxidation of the coal in the furnace raises the heat to incandescence, the lignite burning with considerable flame. Nothing can be done to hurry matters and on account of the thick bed of fuel combustion is slow. Rustling deadens the fire and does no good. Two hours or more will elapse before the furnaces can be fired again. Thus, after the watersmoking and oxidation, by hard work and four to six days' firing, cone 3 (2,174 deg. Fahr.) can be turned from top to bottom of these high kilns.

MANIPULATING A CONTINUOUS KILN

For the continuous kiln two Wood gas producers, about ten feet in diameter, are operated alternatively, one being charged, without cleaning or clinkering, for forty-eight hours and then this one held and the other charged for forty-eight hours. While one producer is being fired the day men clean and clinker the other, lowering the fuel bed but not losing the fire. These producers have a water basin at bottom supporting the ashes and fuel bed and serving as a water seal, allowing no air to enter the ash pit. Notwithstanding the high content of water in the lignite and the evaporation from the water basin, the air for combustion is blown into the producer by means of the usual steam blower, thus adding still more water.

The gas passes from the producers to a soot chamber, built against the sloping end of the kiln, and from thence down both sides of the kiln in underground ducts. The gas is taken from these ducts to the chamber being fired, thru four portable sheet iron hoods, into receiving boxes in the walls of the kiln on each side of the doorway in both ends of the chamber. From these four boxes the gas is conducted to fourteen ports on each side of the chamber, underneath

TABLE NO. 2

		RESULTS OF CHEMICAL ANALYSES				RESULTS FROM BURNING		
Coal sample No.	Condition of coal	Moisture in undried coal	Proportion of constituents in dried coal		Ash	Proportion of ash in air-dried coal	Proportion of combustible remaining in ash	Heating efficiency
			Volatile matter	Fixed carbon				
1	Large lumps	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
..	Moist	32.5	38.7	54.7	6.6	7.7	....	53
3	Moist	32.0	38.1	54.2	7.7	17.8	....	......
1	Moist	32.5	38.7	54.7	6.6	7.7	1.4	68
4	Egg size, moist	31.4	41.1	50.8	8.1	....	.9	60
3	Egg size, moist	32.0	38.1	54.2	7.7	9.7	1.1	70
3	Egg size, moist	....	38.1	54.2	7.7	12.9	3.0	......
5	Egg size, dry	....	36.0	52.9	11.1	....	1.3	......
6	Egg size, dry	....	35.0	46.8	18.2	....	....	87
Youghiogheny	Egg size, dry	1.4	31.0	61.0	8.0	12.7	6.4	100

the air flues, so that the gas, which is lighter than air, rises up thru the air to the combustion bags. The admission of gas to each port is controlled by special valves, hand wheels operating rack and pinion for raising and lowering the valve rods, on the bottom of which are the bell dampers or valves.

The kiln is operated in the same manner as any continuous chamber kiln, the air for combustion being preheated by passing thru the hot bricks in the chambers back of the one being fired and the hot gases, the products of the combustion, are drawn thru chambers ahead of the fire, preheating them. Thus when the burning of a chamber is finished the chamber ahead of it is red hot to the bottom and even the chamber in advance of this is incandescent to the center and often to the bottom. Before the gas is taken off from the chamber just being finished the hoods are connected to the next chamber, so that it is only necessary to open up the valves to start the firing of the chamber.

Each chamber holds about 65,000 standard face brick, the capacity calculated for two days setting. A chamber is filled, another emptied and another burned every two days. The regular product of face brick from the Hebron clay is burned to cone 6 (2282 deg. Fahr.) in the bottom peek hole and cone 8 (2354 deg. Fahr.) in the top. Forty-eight hours are allowed for the burning, tho it is generally done in less time, frequently in thirty-six hours and occasionally in twenty-four hours. In burning a kiln of fire brick in this kiln last December cone 10 (2426 deg. Fahr.) was put down, at top and bottom, in twenty-four hours after gas was turned on the chamber, showing that when lignite is properly applied it ranks high as a fuel for ceramic kiln. If such results have been attained in any other kiln with any other fuel, the writer would be pleased to hear of it.

TABLE NO. 3

COMPOSITION OF GAS BY VOLUME	BITUMINOUS COAL			LIGNITES		
	Average	Max.	Min.	Average	Max.	Min.
Carbon dioxide, CO_2	9.84	....	....	10.55	....	....
Oxygen, O_2	.04	....	....	.16	....	....
Ethylene, C_2H_4	.18	....	....	.17	....	....
Carbon Monoxide, CO	18.28	....	....	18.72	....	....
Hydrogen, H_2	12.90	23 89	11.93	13.74	25.20	13.90
Methane, CH_4	3.12	18.60	2.81	13.44	19.30	9.20
Nitrogen, N_2	55.60	....	....	53.22	....	....
B. t. u. per cubic foot	152.1	176.00	126.6	158.4	188.5	125.5
B. t. u. per lb. of coal	12280	14674	8735	8350	10685	6970

From the knowledge the writer has acquired of this subject he would recommend the following methods of burning lignite in ceramic kilns:

DIRECT FIRING

1. In periodic kilns, for direct firing the furnaces should be of the down-draft, semi-gas type, the coal being charged into hoppers from which it feeds by gravity upon the step-grates below. Such furnaces require considerable height, the charging platform being at least six feet above the bottom of the ash pits. This type of furnace is frequently met with in Europe and this method of firing is called by the German *"halbgasfeurung."* The freshly mined coal should be broken up into lumps two or three inches in diameter before being fired into these furnaces.

2. In a continuous kiln dry lignite slack may be fired thru holes in the top, the firing being done intermittently by hand or better, automatically, in a continuous stream that can be regulated at will.

3. A highly gaseous coal like lignite is well adapted for powdered coal firing by blower in the usual manner. This method is now almost universally employed in burning cement in rotary kilns and gives promise of more extended use. With periodic kilns it could only be used after the ware had been watersmoked and oxidized and the furnaces brought up to a high heat by hand firing in the usual manner. Then the dust firing could be carried to the end of the burn economically and high temperatures attained.

Powdered coal firing would be more successful in continuous kilns, as the air could be preheated and no preliminary firing be necessary to bring the chamber up to the required heat for proper operation of this method.

INDIRECT FIRING—PRODUCER GAS

Lignite is especially adapted for producer gas, since it gasifies more rapidly and at lower temperature than bituminous coal and yields a gas equal or higher in thermal value. The fuel testing section of the United States Geological Survey made a large number of producer gas experiments at St. Louis with the fuels of the United States. Table No. 3 summarizes some of the results.

Thus it is seen that tho the average B. t. u. per lb. of lignite was only 8,350 as compared with average B. t. u. per pound of bituminous coal of 12,280, yet the average B. t. u. per cubic foot of the gas produced from the lignites was 158.4 and for the gas from the bituminous coals 152.1.

To discuss this subject further would run beyond the limits of a single article. Enough has been said to prove that our lignites are a valuable fuel asset and are suitable for use in ceramic kilns.

⁂

Chicago Paving Men Meet with Officials

To complain about the increased cost of cement, sand and gravel and to issue a warning that the mounting costs threatened the continuance of paving work in Chicago, the Board of Local Improvements called a meeting of the material and paving contractors of the city, on Thursday, February 21. At this meeting, held in the City Hall, it was disclosed that several aldermen had had passed in their respective wards, resolutions designed to discourage all paving work due to present economical conditions and to the increased costs of materials and labor. The local board, however, was not in entire accord with this program but did insist that the high cost of materials is throttling much of the city work.

It was made plain by the Board that in cases where bids ran over the engineer's estimate, requiring supplemental assessments, no awards would be made without first calling in the property owners and receiving their approval. An important step taken at the meeting to bring about better conditions was the formation by the material men and contractors and labor representatives of a committee to investigate the situation and suggest means of improving it. The sentiment of the meeting was really one of optimism after the first black clouds had blown away. In all probability work underway will proceed and it is hoped that the negotiations opened between the material men and the Chicago officials will lead to expansion of the city's restricted paving program.

DOES DRAINAGE PAY?

Iowa's Experience is Pointed to as an Example of the Potential Power of Tile Drainage to Increase Food Production

By J. L. Johnson

of the Plymouth Clay Products Company. Delivered before the Iowa Clay Products Manufacturers Association at Its Des Moines Convention

THE SUBJECT ASSIGNED to me, "Making the Manufacture of Drain Tile an Essential Industry During the Period of the War," is the one that I should have chosen among those listed for discussion at this meeting, had I been given an opportunity.

I understand that our worthy president, Mr. Bill Goodwin, is personally responsible for my appearance, and want to first thank him for the courtesy and the confidence imposed upon me, and likewise apologize to the balance of the assemblage for having been wished on them when there is such an abundance of talent among us.

In order to do this subject justice, it will be necessary for us to refer to some statistics, and these, as a rule, are very dry, but are necessary in this discussion. We all know in a general way that in the past ten years numerous Iowa swamps have been converted into fertile acres of good corn producing or other grain producing land. There is a reason for this wonderful transformation of mosquito breeding, duck producing, rush raising, malaria prevailing, worthless swamp land to flowing fields of corn, oats, etc. That reason is the advent of drainage.

Pioneer farmers of this state came originally from some of the older states, Illinois, Indiana and the East, where drainage had been in use quite extensively and these pioneers were well enough informed to know that if these sloughs of Iowa were drained, the most fertile lands could be obtained therefrom. and more corn and oats raised on such drained land than on the higher undrained lands. These same sloughs could be purchased very cheaply several years ago, and you all know today about where the price of well drained farm lands has risen to in Iowa.

Recently I had occasion to prepare some statistics along this line for another association, in an effort to show the government that the manufacture of drain tile was a necessity during the war. To get these statistics I used the Official Census of the State of Iowa for the years of 1905 and 1914, and compared the corn and oat acreage for both of these years for the whole state with twenty counties that are located in what might be termed the Drainage Area of Iowa in the north central part of the state.

In these twenty counties the increased corn acreage in 1914 over 1905 was 279,190 acres or 13,059 acres per county. For the other 79 counties the acreage decreased 27,709 acres, or a decrease of 350 acres per county. For the entire 99 counties of the state the increase in acreage was 251,481 acres, or 2,540 acres per county. From these figures you will readily observe that in the 20 drainage counties the increase was more than for the entire state. Get that point?

The average yield per acre of corn in the 20 counties was 44 bushels per acre in 1914, and 33 bushels in 1905. In the other 79 counties it was 39 for 1914 and 23 in 1905. For the entire state it was 40 in 1914 and 25 for 1905.

I will not go into details with the figures and comparisons of oats that were raised during the same periods, but the results obtained were just about as startling as in corn.

MEASURING THE VALUE OF INCREASED PRODUCTION

The increased yield of corn in the 20 counties referred to, 33,166,774 bushels means something; this would mean today to farmers in those counties, at something less than a dollar per bushel, an additional income of $30,000,000 which would buy a nice bunch of Liberty Bonds. It means to the railroads additional revenue in hauling to the market of more than $3,000,000 which would pay a seven per cent. dividend of $45,000,000 worth of stock. It would mean 24,000 carloads, or 400 train loads and the employment of 1,200 train and enginemen for one day to move it, for which these crews would receive approximately $25,000 additional, or if we concluded to put this corn in pork to feed soldiers, we could produce an additional amount of pork to the extent of 120,000,000 pounds and this would feed an army of a million men two pounds of pork per day for a week, provided they would observe one meatless day. I think, in fact, if our arch enemies, the Germans, had recourse to the entire output of the twenty counties referred to above, our task would be considerably greater.

Now in considering this wonderful additional crop production, don't forget that these figures are not for the entire corn production of these twenty counties, but instead the additional production of 1914 over 1905, which additional production is traceable almost entirely to the drainage of the soil, or those 279,190 additional acres which were drained produced this additional corn. Drainage added to these twenty counties almost one whole county.

Now if the United States is to feed its own population and soldiers, and a large percentage of those of our Allies during the term of this war, it is of the utmost importance that every acre of slough and wet land, not only of Iowa but every other state of the Union where agriculture prevails, be drained and made productive, and this cannot be done by cutting off our fuel supply or closing down our drain tile plants. Some might advance the argument that we could obtain drainage to a large extent by open drains without the use of tile, but too many acres are wasted by open drains, as competent engineers have said that an open drain across a quarter section rendered seven acres unfit for cultivation. and we want all the acres possible.

Our grand President of these United States, Mr. Hoover and Mr. Garfield have probably given this question some thought, but possibly not the deliberation it deserves on account of the greater questions, and while there are other societies and associations no doubt working along this line to show the government the necessity for the continuation of tile manufacture in order to add to the food production. I feel that this association should make every possible effort to bring this fact to the attentoin of the government.

* * *

Fire Brick Exports for 1917 Show Large Increase Over 1916

Notwithstanding the fact that war is raging, there has been a steady increase in the demand for fire brick in foreign countries. American manufacturers of fire brick have shown a steady increased export sales, which record is likely to be continued for some years to come. While there is a demand for building brick for export there was a slight decline in the business during 1917.

Records just made available show that in 1917, 86,030,000 fire brick were exported at the value of $3,549,865. The record of 1916 was somewhat lower than this when only 61,254,000 fire brick were sold foreign buyers at a value of $2,130,065. The export business for 1916, however, shows a decided increase over the export sales of 1915 when 29,936,000 fire brick were exported at a value of $876,141.

In the sale of building brick to foreign countries 10,651,000 brick were sold at a value of $165,709. This is a decrease in building brick export business under 1916 when 15,751,000 brick were sold at a value of $181,344.

The largest export business in building brick so far is that of 1915 when 23,671,000 building brick were exported at a value of $262,511.

Records also show that in 1915 building brick for export sold for little more than $11 per thousand and in 1917 building brick for export sold at around $15.50 per thousand. In taking the export record of November, 1917, when 576,000 building brick were exported at a value of $8,055, the price per thousand was very close to $17.

According to the official value and volume of fire brick exported last year the price averaged slightly over $31 per thousand. In 1915 the same record shows that the price of fire brick for export was between $29 and $30 per thousand. The steady increase in the prices of fire brick for export is shown by the fact that in the record just completed for November, 1917 fire brick was sold foreign buyers at an average rate of about $39 per thousand. This is more of an increase than is shown in the building brick prices when in 1915 building brick was exported at an average of $11 per thousand as against $17 per thousand in November, 1917.

* * *

Eight Hour Working Day for Kentucky

Employers in general are watching with concern a series of bills which have been introduced before the legislature in an attempt to make Kentucky operate under an eight-hour working day. Two bills have been introduced into the House and one in the Senate. The principal of these bills is the Thornton Bill, H. B. No. 18, referred to the committee on Immigration and Labor, and later reported favorably and placed on the record.

The Thornton bill provides that no employer, contractor, or sub-contractor shall require an employe to work more than eight hours in any one day, except in cases of emergency endangering life or property, unless by agreement to shorten the last day of the week, and that for any overtime the employe shall receive fifty per cent. additional. This bill is probably the most dangerous of the lot.

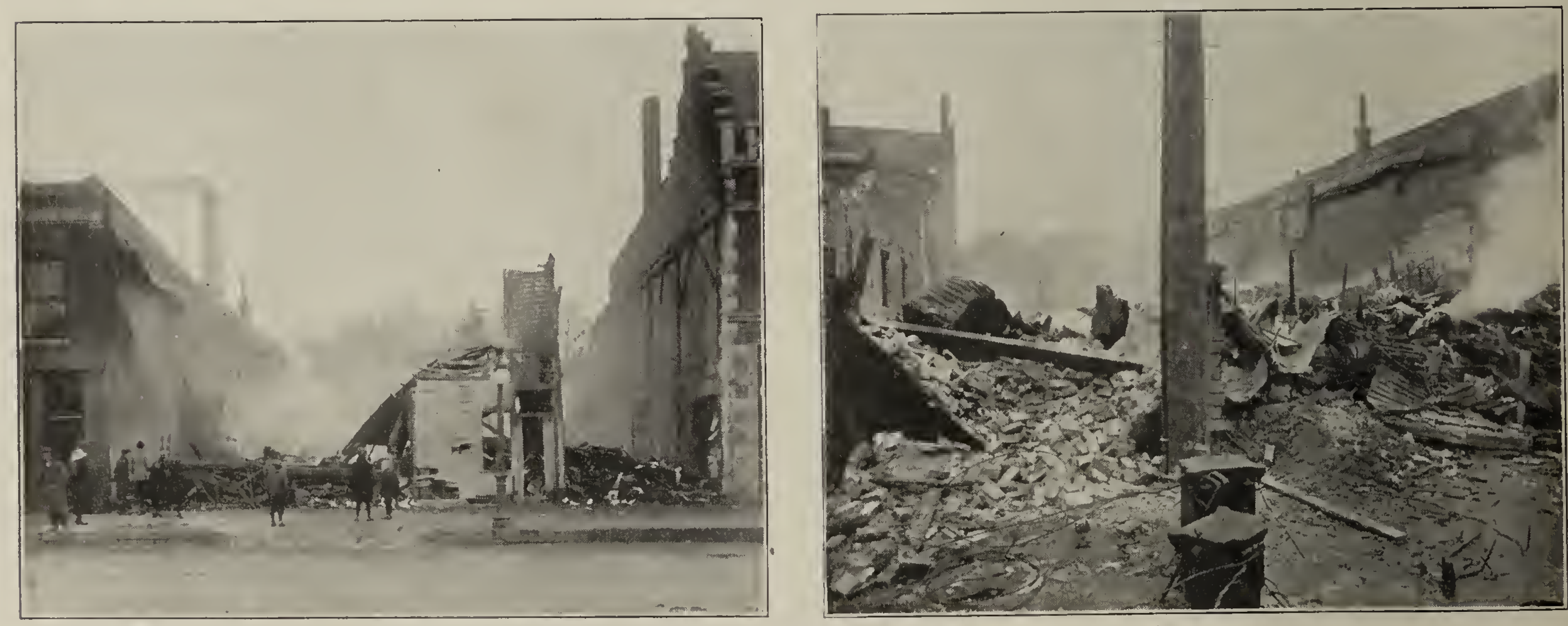
House Bill No. 172 is a similar act, but aimed directly at the railroads, mines and construction companies, also manufacturing. This bill could be construed in its present form to include all classes of employment.

The third bill is the J. A. Leach bill, Senate, No. 227, a sister bill to the Thornton, and referred to "Compensation for Industrial Injuries" committee.

All three of these bills provide for penalties for failure to comply with the law.

* * *

BOTTLING UP FIRE WITH BRICK



So Swift and Fierce Was the Progress of the Blaze That Swept Thru This Frame Livery Stable at Lagrange, Ill., That the Combined Efforts of Three Fire Departments Failed to Arrest It, to Save From Its Lust the Lives of Twenty-Four Horses, or to Prevent the Destruction of Several Wagons and a Large Amount of Grain. Were it Not for the Sturdy Brick Walls on Either Side, the January Blizzard Would Not Have Been Frustrated in Its Attempt to Spread the Fire Over a Wide Area.

FIRING *with* OIL *for* BETTER WARE

Not a General Treatise, But Concise, Bed-Rock, Fundamental Facts About the Use of Oil in Burning

By Joseph K. Moore

Production Manager, Monmouth Clay Manufacturing Company, Monmouth, Ill.

IN AN ARTICLE which I wrote for the American Ceramic Society in 1912, the opening sentence read: "One of the most important factors in connection with the use of oil in the ceramic industry is the source of supply." What was true in 1912 is doubly so today. With the increase in the demand for crude oil products and the advance in the methods of refining, crude oil has advanced in price to such an extent that its cost is nearly prohibitive, excepting in a few instances.

Up to two months ago there were only two firms in the Middle West which would make contracts to keep a continuous supply of oil at a plant and these contracts were based on a sliding scale of a market price on crude oil, so that the only guarantee was one of supply. At that time a six and one-half cents per gallon delivered price could be obtained in the Chicago district, or $2.73 per barrel. This is equivalent to paying about $9 per ton for ordinary Illinois coals, where the same degree of efficiency is used in burning both fuels.

Under the present prices for materials it will cost approximately $6,000 to equip a plant containing seventeen round down-draft kilns and provide for sufficient storage to assure a factory of an uninterrupted supply.

This practical and rather pessimistic preface will at once tend to discourage the use of oil for a great many clay plants. Aside from its cost, however, oil is nearly an ideal fuel for the burning of practically all ceramic ware.

ADVANTAGES OF OIL OVER COAL

Its advantages are many and are briefly outlined in the following paragraphs:

1. It possesses the possibilities of a long flame and is only approached by producer gas in this respect.

2. It is capable of developing an intensely hot fire, which allows quick heating up of a furnace and kiln. This advantage is of especial value in quickening the schedules of burning and saving time in kiln turnovers; and, since the coal consumption on a kiln is nearly directly proportional to the length of burn, it is possible with some wares to nearly equalize the difference in price of fuel by overcoming the lags in temperature due to the periodic hand firing of the coal. This advantage of an intense heat has also proven of great value in salt glazing of brick and hollow ware.

3. There is no cleaning of fires, no handling of fuel, no removal of ashes, no soot, no dust. The first of these makes the procuring of labor much easier and where kilns are located closely together or congested in buildings, the cost of getting coal to the kilns and removing the ashes assumes such proportions that it almost offsets the economy produced in the purchase of a cheaper fuel. In cities where smoke ordinances are troublesome and ash removal expense is a large item, oil fuel can be substituted for coal with very good results.

4. In plants of ordinary size the oil system will reduce the number of men employed in burning in the ratio of seven to two.

5. Oil can be stored in 50 per cent. of the space required for coal.

6. Burning temperatures and stages are very easily controlled, and a decidedly more constant rise of temperature is possible with oil than with coal. The different stages of the burn are handled with much greater ease, alternating oxidizing and reducing conditions can be produced at will and easily controlled.

Price of Oil, per Barrel	EQUIVALENT COSTS OF COAL, PER TON			
	In Large Ceramic Plants	In Small Ceramic Plants	Under Steam Boilers	Losses in Shipment Considered
$0.20	$0.53	$0.56	$0.65	$0.75
.30	.80	.84	.98	1.12
.40	1.06	1.11	1.30	1.49
.50	1.32	1.39	1.63	1.86
.60	1.59	1.67	1.96	2.24
.70	1.84	1.94	2.28	2.61
.80	2.11	2.22	2.61	2.98
.90	2.37	2.49	2.93	3.35
1.00	2.63	2.77	3.26	3.73
1.10	2.91	3.06	3.59	4.10
1.20	3.16	3.33	3.91	4.47
1.30	3.43	3.61	4.24	4.85
1.40	3.70	3.90	4.59	5.22
1.50	3.87	4.07	4.89	5.59
1.60	4.20	4.42	5.20	5.97
1.70	4.47	4.71	5.54	6.34
1.80	4.64	4.99	5.87	6.71
1.90	4.99	5.26	6.19	7.08
2.00	5.26	5.54	6.52	7.45

7. Invariably, because of the better control of firing and the steady progressive rise in temperature, without the periodic lag of coal firing, higher percentages of No. 1 ware are obtained by the intelligent use of oil as compared with coal.

EQUIPMENT REQUIRED

In installing a system of oil burning the equipment required can well be classified under the following six divisions:

1. Oil storage tanks equipped with steam coils for heating the tanks in winter, of sufficient size and number to hold two weeks' capacity at the least.
2. Steam coil for heating oil in the tank cars.
3. Two duplex pumps 5¼ by 3½ by 5 set up in tandem.

These pumps should be set upon iron trays and equipped with babbitt or brass rings on the oil end. No fibrous packing is required. Connected to the pumps should be about a 100-gallon tank with worm coil for steam in order to heat the oil and make its flow uniform.

4. Sufficient heaters in the line to always guarantee an easy flow.

5. Sufficient oil strainers to keep the oil free from clogging impurities which stop up the needle values on the burners.

6. Oil meters of the Enarc type 12⅝ by ¾ inches where individual fuel cost are wanted per kiln.

TROUBLES AND REMEDIES

The following are some of the troubles encountered in the burning of oil and their remedies:

1. All tank cars do not have the same size outlet, so at the outset it is wise to provide a four-inch main line pipe from the cars to the storage tank fitted with various sized fittings up to eight inches.

2. In winter the removal of the oil from the car is very slow. A portable steam worm should be provided to introduce into the tank car.

3. The first storage tank should be well depressed below the surface of the ground to give strong gravity flow from the tank car and should be of greater capacity than the tank car—1,200 gallons usually.

4. The storage tanks should be so arranged that one of the two duplex pumps can pump from the first storage tank to the auxiliary ones at the same time, the second pump is supplying the burning line.

5. In winter trouble is experienced in keeping the oil sufficiently mobile to give uniform flame at the burner. This is easily remedied by having the oil supply line around each kiln 2 inches in diameter and inside of this run a ⅜-inch pipe with steam passing thru it. The expansion can be taken care of by using a cap at one end of the oil line, letting the ⅜-inch pipe extend beyond. Inside the cap a simple stuffing box can be made and the ⅜-inch pipe smoothed for about 6 inches. This will provide a sliding joint.

I speak of this in detail as an oil supply to the burner which is not uniform, causes a sputtering flame. Because of this the burners will very often go out almost continuously at low temperatures.

ATOMIZATION

6. Steam has been found to be the most successful atomizing agent, altho compressed air, kept free from water, is often used. At high temperatures steam only should be considered.

7. Difficulty is often encountered in controlling the temperatures during the watersmoking period, because of the burners continually going out. This can be overcome by building a small brick housing of dry fire brick around the nozzle of the burners. These brick become hot and help the oil to stay ignited. In this way one has a small hot fire and not a large cool fire. When the temperature needs advancing these brick can be knocked down with a poker.

8. Some manufacturers experience difficulty because the linings of the furnace melt more readily with oil than coal. This should not be true if the burner is placed in a regular down-draft kiln fire box, the burner raised eight to ten inches from the ground, and the point deflected downward about seventeen degrees. Also, care must be used in regulating the steam and oil in order not to get an extremely hot box. In most ceramic work a long flame is most desired and this is merely the proportion of oil, steam and air.

BURNERS

There are a great many good burners on the market, with as many particular claims to their excellence, the principles are so simple I shall not describe them. For comparative purposes the following table may be used:

Fuel Oil Quantities

Car	Bbls.	Gals.	Wt. in Lbs.	Heat Units, B. T. U.
1	238	10,000	79,000	1,461,500,000
	1	42	331.8	6,138,300
		1	79	146,150

⁂

Interstate Mantel and Tile Dealers Convene

"No man now living will ever again have the opportunity to build a home as cheaply as he may this year," says Thomas J. Foy, Cincinnati, secretary-treasurer of the Interstate Mantel and Tile Dealers' Association of America, which had a four-days' convention at the Hotel Deshler in Columbus, Ohio, last week. "Admitting that prices on a few building essentials are just now abnormally high," Foy says, "scarcity of material and labor after the war, occasioned by Europe's unprecedented demand on America's resources, will create a normal increase in prices that will not be offset during the present generation."

"There are no non-essential industries," declared F. W. Walker, Beaver Falls, Pa., in an address on "Existing Conditions." He is commissioner for the Tile Manufacturers' Credit Association. Admitting that some industries must be given preference in time of war, he contends that all industry is essential.

In all 150 delegates from all sections of the Middle West attended the meeting. Much interest was shown in the papers and discussions following the various addresses and the labor problem was discussed at length.

Resolutions were adopted extending to President Wilson and the national administration the support and cooperation of the association. In fact, patriotism was the key note of the convention, all present showing willingness to make any sacrifice necessary to win the war.

One of the features was a photographic contest of tile installations which was participated in by about a score of members. This contest was held in the Deshler Hotel. The photographs included installations of public buildings, residences, hospitals, restaurants, swimming pools, and a variety of other construction. The prize was awarded to Mart & Lawton, New York.

Thomas E. Beck, of Detroit, was elected president, succeeding Robert Beck, of Chicago, who had been president of the organization for six years. Thomas J. Foy, of Cincinnati, was re-elected secretary-treasurer for the tenth consecutive year. Joseph W. Lantry, New York, and A. H. Simmons, Baltimore, were selected vice-presidents.

⁂

There is a marked shortage of domestic pottery in this country, and it is all due to the fact that the manufacturers have either been unable to obtain production, or railroads have been unable to accept shipments when offered. The embargo situation has at times proved a barrier to both buyers and sellers of dinnerware and other items of table necessity. Now that embargoes are being lifted, the volume of shipments being started forward are heavier than ever before experienced.

BALDWIN FINDS SOME SHARP POINTS *in the* INCOME TAX

An Extremely Interesting Article Wherein Mr. Greenwood Gives Some Valuable Pointers to Clay Products Manufacturers on a Subject Which is Demanding the Attention of Every Individual at the Present Time

By G. W. Greenwood, M. A. (Oxon)
Secretary United Fire Brick Company,
Uniontown, Pa.

NOT SITTING, but stretched out nearly full length in one of the easy chairs of the Brixton Inn, Baldwin was toasting his toes before the fire. Large logs of hard wood were blazing on the picturesque andirons, and throwing out vast quantities of heat. Outside, the trees were coated on one side with sleet, and the sharp gusts of wind brought down little half cylinders of ice, dislodged from branches whipped by the blasts.

Telephone and telegraph wires hung from the poles still standing, like weeping willows, or lay in tangled masses like a skein of yarn purloined from a knitting bag by a playful kitten. And here, in the lobby of the Brixton Inn, Danneman, the attorney, emerging from the dining room, found the elongated sales manager.

"What are you doing here, instead of by your own fireside?" he greeted.

"I had an out-of-town engagement, but the train is being marked up later and later as time passes, and it looks as tho I am not going to get away until afternoon," responded Baldwin. "When I asked the ticket agent for a time-table, he said 'Time-table? You don't want a time-table. What you want these days is a calendar!' But how is the world using you these strenuous days? Still struggling with income tax entanglements? It seems to me those questions are about as complicated as the telephone wires are at present."

"Telephone wires aren't in it with the income tax provisions for complexity," declared Danneman, dropping into a neighboring chair. "I have just come from attending a meeting of the directors of a concern which is trying to evade bearing its portion of the national burdens. First, they wanted to charge off all the depreciation and depletion they dared, to inventory the stock on hand at the lowest figures possible, and thus cut down their net income all they possibly could. A few years ago they were trying just as ardently to show paper profits which did not exist. At that time, they argued that they were keeping the property in a good state of repair, so that no depreciation was necessary; and as for depletion—well, there was enough clay in the hillsides to last a decade anyway, so wait until a good year before charging off depletion."

"The new tax law has certainly changed some radical managers into ultra conservative accounts, hasn't it?" responded Baldwin.

"Indeed yes. And they are fooling themselves just as much as they were then. In the case I was referring to, I told them to go to it, but that they would have to apportion the charges over the whole year, and thus while cutting down their net income, they would at the same time be cutting down the invested capital on which the percentage of net income is based. By keeping up this process a few years, they would find all their invested capital wiped out. They would be in the position of the man who climbed a tree and sawed the limb off between himself and the trunk."

"Sort of rock-a-bye war baby, in the tree top," suggested Baldwin. "Some of these people are going to get a fall some of these days. But how did the company stack up? Did they find some way in which to reduce their surplus without reducing their invested capital?"

"They did. They decided to vote themselves good sized salaries as directors and to invest the money in Liberty Bonds. Next thing, they will be criticising their more patriotic business associates for not buying as many Liberty Bonds as they have."

DOUBLE ENTRY BOOKKEEPING

"Then there is another concern I know of," continued Danneman, stretching his thin hands out to the hospitable blaze. "They make two sets of statements. On one, for government consumption, containing heavy charges for depreciation. The other, without these deductions, for banks from whom they have money borrowed."

"That's what you call double entry bookkeeping," commented Baldwin. "One set of books to be produced in court, the other not. What a pity they don't get their reports mixed sometimes."

"Yes, there would be something doing then for sure. Some of these sharks are about as short-sighted as the farmer who had a cow which he valued very highly. One day an official looking individual called upon him and solemnly inquired the value he put upon the cow. Not wanting to take a chance on being assessed a big tax on the animal, he set merely a nominal figure."

"And did he get away with playing the bear in his cow market?" asked Baldwin, with interest.

"He did that, the official was more than satisfied. He was adjuster in the claim department of the interurban railway which had just killed the cow, and the farmer had to settle at the value he set. Funny how people fall all over themselves," he went on, placing the tips of his fingers together and looking over them at the fire. "Now I know a man, a dried up sort of a little fellow, whose eyes are set close together and are slightly crossed. Folks say they became crossed in trying to see both sides of a dollar at the same time. A few years ago he organized a company in which he has a controlling interest, making the capital stock as low as he could, $5,000. Then he lent the concern $95,000 so that it really had an invested capital of $100,000. But as he showed this as a debt to himself, the stock stood worth no more than par, and state tax reports were made up on that basis. But can you see what that has done to them in making their income tax report?"

INCOME TAX INCREASED

"Sure," said Baldwin. "I think I know that much about the income tax return. No matter how valuable their holdings, they are limited to the par value of their stock, together with accumulated surplus used in the business—"

"Surplus nothing," rejoined Danneman. "The dividends were extracted as fast as they were evidenced by the books, and then he lent the company what money they needed to keep them going."

"In other words, they were like the man who was determined to live within his means, even if he had to borrow money to do it. But in this case, it seems to me that the company will pay sixty per cent. of all its income above something like $3,500."

CAUGHT IN THEIR OWN TRAP

"On all above $3,450 to be exact," corrected Danneman. "And if the treasury department had not departed from the strict letter of the law, they would have paid excess profits tax ranging from twenty per cent. to sixty per cent. on every dollar over $1,650. In any event, by keeping a low capital stock, they have evaded a relatively small tax on it, but have been caught badly in their own trap. I have been happy for a week thinking about it!" drawing up one knee and clasping his hands enthusiastically about it. "You see, he had compressed the profits down to $12,000, feeling that with an exemption of nine per cent. on the invested capital, $100,000 according to his imagination, plus an additional $3,000 would leave the company no excess profits on which to be taxed. But I casually remarked that the invested capital was limited to the par value of the stock, irrespective of the value of the property owned by the corporation."

"And did he get excited about it?" asked Baldwin.

"Did he? Well, I should smile," said Danneman, suiting his action to his words. "But that isn't all of it. In making up their net income, they had deducted the interest paid him on the $95,000 borrowed, whereas they are entitled to interest only on $52,500. You see, when the interest bearing debt at the close of the year is more than twice the capital stock issued, only one-half the excess can be taken into consideration. In this case, for example, deducting twice the capital stock leaves $85,000 and interest on one-half of this, $42,500, is excluded from the deductions from gross income. So for income tax purposes they must show a net income of $2,550 more, or $14,550. See?"

"Danneman, you mix up my brains like a pug mill. Just say the funny parts slower, in words of one syllable, will you?"

FIGURES SHOW FALLACY

Taking a sheet of Brixton Inn correspondence paper, Danneman began, "Suppose instead of capitalizing at five thousand and borrowing ninety-five thousand, they had capitalized at one hundred thousand. The relative showings would for the past year have been something like this:

	First Class.	Second Class.
Capital stock	$ 5,000	$100,000
Borrowed money	95,000	none
Net income	12,000	17,700
Add for interest deducted in excess of allowance	2,550	none
Deduct exemptions of 9 per cent. and $3,000	3,450	12,000
Balance subject to excess profits tax	11,100	5,700
Subject to 20 per cent. tax	none	3,000
Subject to 25 per cent. tax	none	2,700
Subject to 35 per cent. tax	none	none
Subject to 45 per cent. tax	none	none
Subject to 60 per cent. tax	11,100	none
Total excess profits tax	6,660	1,275

"When I showed these figures, he had palpitation of the pocket book. He is one of those fellows who take a crude interest in anything not bounded by the almighty dollar."

"Perhaps outside financial affairs he takes a crude interest, and in financial transactions he takes the interest before it is accrued," suggested Baldwin.

"Not always. For example, last year he thot it a good time to foreclose on a mortgage which had long been in default, and collected it, together with unpaid interest for several years past. Now he finds that all the interest since March 1, 1913, must be included in his return of net income for the year 1917, regardless of the years in which it accrued."

Shaking his head, Baldwin sighed wearily, "When it comes to this income tax, I feel pretty much like the man who wanted to know why an automobile ran. After he had taken a whirl at the insides, he admitted that he now saw why the back wheels went round, but couldn't for like of him see what made the front wheels turn. I'm getting so all fired hungry I can no longer take even a polite interest in the topic."

"I'm afraid tacks aren't a very good diet," confessed Danneman. "Why didn't you come into the dining room at the beginning? Then you could have lunched with me."

"I sure would have made a bee line for the doors as soon as they were opened, had I known the train would have been this late. But they only reported it a little later from time to time, and allowed no time in which one could eat. Never mind. They carry a diner on this train and I'll make up for the delay as soon as I get aboard. Guess I'll amble over and see how it is coming on now."

"Oh, I beg your pardon, Mr. Baldwin," responded the ticket agent contritely. "I meant to have called you half an hour ago and to tell you the schedule has been annulled. The train went out of commission ten miles south of here, and there won't be any train today at all!"

WHAT CONSTITUTES INVESTED CAPITAL?

We believe that, in addition to the above remarks by Mr. Greenwood the following information relative to the income tax, written by our Washington, D. C., correspondent, Waldon Fawcett, will be of value to our readers.

The mooted question of what constitutes, within the meaning of the law, "invested capital" is one that is going to stare the average man in the industry squarely in the face when he takes his pen in hand to fill out his pesky "return." An unpleasant "joker" is found in the circumstance that in figuring investment, such assets as good-will, trade-marks, etc., do not count for anything unless it can be shown that the owner acquired them by payment of cash or stock or other valuable consideration. This is indeed comforting to the owner of a one-man business who has built up his own good-will.

In the main, however, the question of "capital invested" is not as complex as the conundrums that will crop up as to how to figure holdings, profits, losses, etc., in order to make sure that Uncle Sam is given a share of only what is really "velvet" in the business. The matter of how to make inventories has been especially perplexing. The Internal Revenue officials tell me that, first of all, the bookkeeping for the benefit of Uncle Sam should be on the basis of the calendar year. If any reader has been wont to begin his business year on any other date than January 1, it behooves him to come to the federal basis, at least for returning taxes.

FORMULA RECOMMENDED FOR INVENTORIES

As for inventories, the formula recommended at the U. S. Treasury is to take the figures covering stock on hand and work in progress as of date to December 31, 1916, and then, by adding the cost of material and supplies purchased during the year, balance the total against the inventory of December 31, 1917, plus the total gross receipts for the year. The authorities say that this is the plan for the business man to follow rather than to attempt, as some are doing, to deduct total cost of stock from total receipts to find gross income.

A disputed case that was recently referred to the Bureau of Internal Revenue for decision and which may interest men in the clay products industry has to do with a contract that was entered into in 1917 but will not be completed until 1918. In this instance the business man was told that inasmuch as he is unable to determine what amount of gain or profit he will derive from the contract until it is completed, the payments received during 1917 need not be entered in the present tax "return" but can go in next year when it will be possible to show what net gain or profit was derived.

In my talks with the Internal Revenue officials I have gained the impression that while Uncle Sam wants all that is coming to him in the way of war taxes, there is every disposition to be fair and even liberal in allowing the handler of clay products to deduct every legitimate item of business outgo before beginning to pay war taxes on income or profits. To be sure, the business man cannot count out items of personal expense or household expenditures. He will not even be permitted to charge up to business the cost of his lunches that he has sent to the yard or the office at the plant in order that he may stay on the job every second of the noontime.

But every disbursement actually made in the conduct of his business comes out. This means not only such items of overhead as rent, taxes, insurance premium, cost of labor and material, salaries, telephones, postage, drayage, freight bills, etc., but likewise advertising and similar expenditures. Even the cost of your subscription to *Brick and Clay Record* should be chargeable as a business expense and if in quest of business you entertained customers at dinner or at the theatre it all comes under this same head.

Furthermore, the business man is entitled, as a "deduction," to a salary allowance or compensation for services even if it has not been his custom to draw an allowance of that kind. But in the quest for expenses new machinery must not be charged up to operating outlay. New machinery, alike to new buildings, are regarded as investment of capital and all that is allowable in such cases is a deduction for "depreciation." Uncle Sam figures that a brick building will last 35 years and that ordinary machinery has a servicable "life" of 10 years. From this you can calculate annual depreciation. Always, however, it is insisted that the depreciation allowance represents actual wear and tear.

* * *

Motor Truck Transportation for Ohio

What Ohio paving brick manufacturers looked upon as the first comprehensive plan of using the highways of the state for freight transportation, and which follows out the propaganda of the National Paving Brick Manufacturers' Association, by Secretary Will P. Blair, from its headquarters in Cleveland, Ohio, was put into effect this week when the Highways Motor Transport Co. established routes east and west from Cleveland covering a territory in all about 125 miles in extent.

Seven motor trucks are now being operated between Conneaut on the east, and Sandusky on the west, and intermediate towns to the number of twenty-three are served on these routes. The plan has received the endorsement of the Cleveland Chamber of Commerce Transportation Committee.

According to C. R. Richardson, president and general manager of the transport company, new extensions already are planned, because in the short time the motor trucks have been in operation, the demand has increased beyond the capacity of the trucks at present.

With the improvements lines will be established to the south as far as Oberlin and Norwalk.

Freight stations have been established in six of the largest cities for the convenience of shippers, and similar assembly stations will be maintained in other towns. Regular schedules will be maintained, and it will make no difference whether trucks are loaded to capacity when the time arrives for them to depart from any town. At the same time facilities will be provided for any extra freight that might overtax the present system.

"The plan is feasible mostly because of the improved highways," says President Richardson. In this he reiterates the statements of Mr. Blair, made many times during the last few months when motor truck transportation was advocated by the national secretary as a definite means of relieving the steam railroad congestion and in lifting embargoes. "Delays and loss of business will be overcome," says Mr. Richardson. "No embargoes will be on freight accepted by our lines. Our rates are no higher than those of express companies, and in some cases they are as low as regular freight rates."

The significance of these motor truck lines, as affecting conditions that brought about the heatless Mondays order, is set forth by Traffic Commissioner Hurd, of the Chamber of Commerce. "This plan will relieve the railroads of short hauls, release locomotives for coal hauling, cut down the amount of switching, and free more cars for long haul freight purposes."

While motor trucks have been hauling freight for several weeks between Cleveland and Akron, the Highways Motor Truck Transport Co's. plan is the first regular scheduled system to be established in this part of the country. Six-ton trucks are being used.

Reflection of the activity for improved roads thruout the country is seen in the suggestions being put forth by the Cleveland Automobile Club. According to Secretary Fred H. Caley, this can be accomplished by a systematic policy of construction and improvements in all parts of the country, and not confined to a few sections. To this end road building should be taken out of politics, says Mr. Caley, and to meet war time emergencies the piecemeal, logrolling plan of road building must be abandoned. In this way, he contends, the nation's transportation needs will be met more easily.

INSTALLING *and* OPERATING *a* NATURAL GAS BURNING SYSTEM

Giving the Results of Eighteen Years' Experience in the Use of Natural Gas in Down Draft Kilns for Burning Clay Products

By E. E. Shumaker
Superintendent of the Clarion Fire Brick Company,
Pittsburgh, Pa.

SINCE 1900 we have been burning brick with natural gas as fuel, and for a dozen or more years we were constantly experimenting with burners of almost every design. During this period of experimentation we changed our fire boxes, riddles, flues, and stacks with the hope of securing better results and lowering the cost of burning.

Before describing our method of burning, I would like to state that where natural gas is used as a fuel, the size of the flues and stacks of the kiln does not have such an important effect on the burn as one would ordinarily suppose. For instance, a kiln 24 feet in diameter might have eight 12x13 inch flues leading to one stack 24x24 inches in area, or four 18x18 inch flues leading to four 13x27 inch stacks. Then, again, a kiln 28 feet in diameter might have five 18x18-inch flues leading to five separate stacks 10x13 inches in area.

However, care must be taken not to get too much draft since gas will then be wasted, but this can be overcome by the proper manipulation of the dampers. On the other hand, poor draft is apt to cause discolored brick. A good plan is to allow plenty of size for the flues because sand accumulates in them very rapidly, and if made deeper they do not need to be cleaned each time the kiln is set.

Fire boxes or pockets should be approximately 24 inches high and 13 to 18 inches deep, with an 8 inch wall, and built in a semi-circle.

ARRANGEMENT OF PIPES

In regard to the placing of the pipes on the kiln, for kilns 24 to 28 feet in diameter, a 3 inch pipe should be laid around the crowns near the spring of the crown or on the top of the kiln wall. The pipe line should be tapped above each fire box, at a point about 6 inches to one side, so that the vertical 1¼ inch pipe does not interfere with the peep holes, and 3 inch pipe saddles with a 1¼ inch opening for the outlets, put on. A 1¼ inch pipe should run from here down to the center of the fire hole, which should be 8x8 inches or 9x9 inches square. These fire holes should be as near the floor-level of the kiln as possible. To the lower end of the pipe 1¼x½ inch ells should be connected and to these ells is screwed on a short piece of ½ inch pipe, which is just long enough to reach a point in the fire hole 6 to 9 inches from the outside of the kiln wall. Or, you may use 1¼x1¼ inch ells and 1¼ inch nipples long enough to reach into the kiln, in a manner as described above, using 1¼ inch pipe caps, which can be drilled so that they will have a ½ inch hole at the end or even larger if necessary. A 1¼ inch line should be provided with a flat headed brass cock, located at a convenient point where it can easily be reached with a wrench and permit the burner to see into the peep hole at the same time.

Now in regard to the gas supply, with 12 to 18 ounces of pressure, depending upon the calorific value of the gas, it is possible to burn any kind of fire brick. It is very important to have a gas regulator on each kiln, with plenty of pressure back of it so that the delivery of the gas is made uniform. Meters should also be used since there will be quite a variation even in burning the same kind of kilns, and it will enable the burner to be guided in the regulation of the gas supply, and will thus effect a big saving.

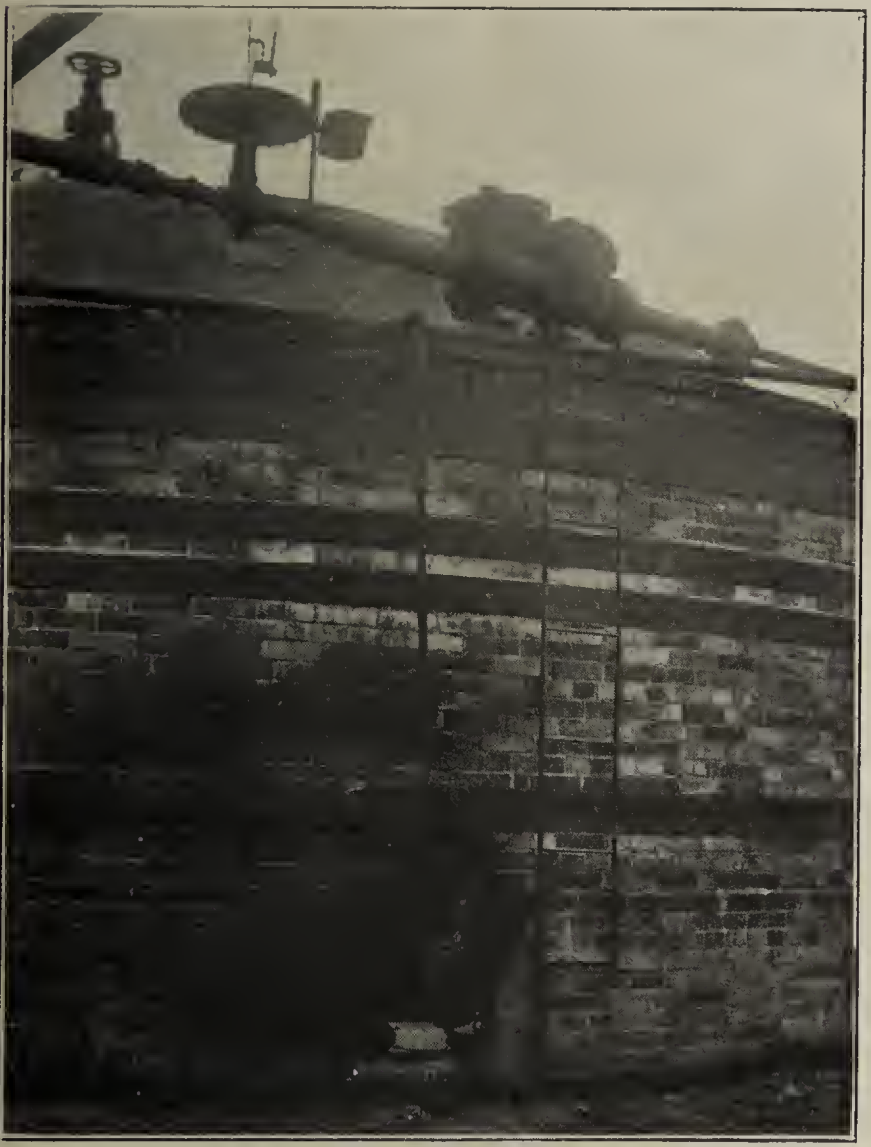
STARTING THE BURN

To fire kilns, a brick should be set up in front of the gas burner about 2 inches from the outlet, and then a lighted torch inserted and sufficient gas turned on so that a flame of about 18 to 24 inches long will be formed. Do not plug up the holes around the burners unless the fires go out. It is important that the holes on top of the kiln be uncovered for the first 12 or 24 hours or the moisture in the brick and kiln walls will smother out the fires. At the end of the period, cover up the holes but do not add any more gas for about 5 hours

The Kiln Yard of the Clarion Fire Brick Co., Showing the Arrangement of the Natural Gas Burning Pipe System.

or until the stacks are all watersmoking. Then add a little gas and regulate the flames every few hours as required.

It is a good plan to mark the stop cocks so that you can tell just how far they have been moved from time to time and, if for any reason it is necessary to turn off the supply of gas for a few minutes, you are able to light the fire again and obtain the same flame that you had before. In using gas a beginner is quite liable to think that the kiln is not heating up fast enough and consequently uses up too much gas which might cause formation of cores in the brick.



It Will Be Noted That the 3 In. Pipe Around the Kiln Crown is Tapped Six Inches to One Side so That the Vertical 1¼ in. Pipe Does Not Cover Up the Peep Hole.

When the brick begins to get a cherry red color knock down the brick in front of the burners because from this point on there will be no danger of the fires going out and the flame will also have a better chance to burn a greater quantity of air, which, of course, is very essential to economical burning.

Care should be taken during the second or bluesmoking stage not to fire so hard so that the bluesmoke becomes a brownish color (blue smoke from the stack indicates soft brick in the kiln). If the blue smoke is kept thin there will be no danger of endangering the brick. Allow as much air as possible to enter around the burners until after the bluesmoking period is over, after which part of the opening may be closed, or the air cut down by taking a brick out of the damper hole or by using the damper, depending upon the draft of the kiln. Care should be taken, however, that the kiln does not get too hot as the brick can easily be overburned in a very few minutes when the finishing temperature approaches. A good plan is to use pyrometric cones, placing them where they can be easily seen thru the peep holes. The cones will also serve as "tell-tales" if the burner lets the kiln get too hot.

If the brick are dry when set, 36 to 48 hours time should be sufficient for watersmoking, and for fire brick, 3 to 5 days after watersmoking should complete the burn. It is quite easy to burn with natural gas, so easy in fact, that the tendency is to grow careless in the regulation of the flame. A great deal of economy can be effected by *watching carefully the manipulation of the burner and flame on kilns fired by natural gas.* Do not forget that combustion will not be complete unless a sufficient supply of air is funished to the gas. Hence, for burning with gas it is absolutely essential for the regulation of the flame in regard to its gas supply, air supply, and length to be watched very carefully.

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Allied Meeting to be Held at Champaign

While it is a little early to give any very complete idea of the good things in store for those who will attend, suffice it to say that this year's meeting at Champaign of the Illinois Clay Manufacturers' Association will be a hummer. A new feature will be introduced in that several industries and organizations which are closely allied to the aforenamed association are arranging to meet at the same time, thus assuring a large attendance and a successful meeting. The following organizations will meet with the Illinois Clay Manufacturers' Association on Wednesday and Thursday, March 13 and 14, at the Beardsley Hotel, Champaign, Ill: Chicago Section of the American Ceramic Society, Illinois-Indiana Division of the American Face Brick Association, Illinois Drain Tile Manufacturers' Association, Illinois Paving Brick Publicity Bureau, and the Indiana Brick Club.

The meetings will be marked by the prominence of the speakers and by the timeliness of the topics that will be discussed. On Wednesday morning a business session will be held after which papers will be read. In the afternoon it is planned to have papers presented by representatives of the various different organizations which are meeting together so that everyone present will be interested in the program.

On Thursday morning papers on fuel and war problems will be read and the afternoon will be given over to meetings of the individual sections present at the convention.

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Lebanon to Have New Silica Brick Plant

Dr. H. M. Walters, of Lebanon, Pa., has discovered a ganister deposit, which, it is claimed, runs so close to the ideal chemical composition of that material as to make his discovery an important one. The deposit is located in Lebanon County, Pa., midway between Lebanon and Reading. A silica brick plant will be built adjacent to the ganister deposit by the Waltstone Refractories Co., the incorporation of which was noted in *Brick and Clay Record* in November.

Ganister rock, as is well known, is the material from which silica brick is made and silica brick, in turn, are necessary to the production of open-hearth steel, in by-product coke ovens and in any number of other places where extremely high heats are the rule. It is estimated that something like 325,000,000 silica brick were produced in the entire country during 1917.

The Walstone Refractories Co. purposes to build a plant with capacity for producing 12,000,000 silica brick annually, or about 40,000 a day. The General Refractories Co. has double this capacity at its Joliet, Ill., plant, and the same capacity at Mt. Union, Pa., as at Joliet. Its Claysburg, Pa., plant turns out 65,000 silica brick a day—or could, if railroad equipment and labor supply were better.

NEBRASKANS "CARRY ON"

Publicity Campaign, Started With Birth of Nebraska Brick and Tile Association, Approved at Successful Convention

NO OTHER STATE ASSOCIATION, we believe, can exhibit so constructive a program and display achievements comparable to those attained in three years (its period of existence) by the Nebraska Brick and Tile Association. Three years ago this organization held its initial meeting at which the clay products manufacturers of the state banded together for the protection of their mutual interests and for co-ordinating their efforts toward the development of a bigger market and better conditions in Nebraska.

Not content to assemble merely for the purpose of "discussing" the benefit to be derived from advertising, and "considering" the tremendous opportunity for the sale of burned clay products on the farm, the members of the Nebraska Brick and Tile Association have been quick to change their prayers to deeds. Instead of being lulled to gentle rest by extended somniferous talks on what might be done by the use of printers' ink, the delegates assembled at but the third convention heard the report of an advertising committee that had *actually done some advertising.* A farm paper campaign, the committee reported, had been started vigorously with a full page advertisement in the "Nebraska Farmer," which will be followed in every issue by representative insertions. They were also told of the returns being made on the money which they invested in sending out a business builder, to create a general desire on the part of the farmers for the construction of permanent farm buildings. In addition to these two very progressive steps taken at an actual money cost to the members of the association, a display of burned clay products was made at the State Fair which involved no small monetary consideration.

BUSINESS OUTLOOK GOOD.

The aggressive program begun three years ago was amplified and stamped with the official seal of satisfaction at the third annual convention held at Lincoln, Neb., on January 29 and 30. Prior to calling the meeting to order formally a discussion of business prospects, concerning plans for 1918 was held by the members present. In this discussion it was disclosed that the outlook for many of the companies for business in 1918 was fully as good as that in 1917. The discussion also developed the fact that a number of plants were receiving an increase of business from the farmers and that orders for farm buildings have been coming to them in increasingly large numbers during the past few weeks.

Acting as temporary chairman, in the absence of the president and vice-president of the association, the organization's resourceful secretary, Frank I. Ringer, called the convention to order on Tuesday morning. The minutes of the last annual meeting and the quarterly meetings of July and October, 1917, were read and approved. Mr. Ringer also read the report of Mr. Cable, who has been doing very constructive organizing and sales promotion work for the association. O. R. Martin then read a report on the audit of the books of the secretary-treasurer.

SUMMARIZING THE PUBLICITY WORK DONE.

"I think so far this has been about the most remarkable small association I have ever known of," was one of the opening sentences in the report of A. H. Farrens, on the work done by the association along chiefly a publicity line during the past year, and in speaking it he but formed the mouth piece for practically every member of the association, so great is the enthusiasm in the work being done. Mr. Farrens disclosed the fact in his report that despite the large amount of publicity work accomplished by the association it still had $1,800 in the bank. In going over the expenditures made he laid particular stress upon the work accomplished by Mr. Cable, representing the State University, in a campaign to increase the construction of permanent farm buildings. Mr. Cable accomplished very satisfactory results in increasing the use of burned clay on the farm, numerous inquiries being received as a direct result of his work.

In inaugurating its advertising campaign the advertising committee decided that the most promising market for clay products lay in the state's agricultural and rural districts since the present prosperity of the farmer placed him in a position to make improvements which would have caused him to hesitate a few years ago.

Proceeding upon this basis the farm paper has been selected as the medium thru which to reach the desired field. The keynote of the association advertising being done in the farm papers is that the association has nothing to sell but service and that its mission is to educate the farmer to the use of permanent building materials, getting the information to him in so far as possible without cost. Complete sets of blue prints have been prepared which are used to answer the inquiries received about all types of farm buildings. At the conclusion of his report, Mr. Farrens requested that a committee be appointed to investigate the advertising plans and to make suggestions for changes or to approve the program as it now stood.

At the opening of the afternoon session, a committee consisting of B. Koehler, Hugo Polenske, John Turner and Mr. Farrens, was appointed for this purpose.

URGES NEED FOR KNOWING COSTS

A very enlightening address on accounting was then made by Professor O. R. Martin, who indicated the increasing need for reliable systems of accounting. Government action in controlling industries and government taxes requiring a very detailed statement of the cost of the year's operation—and the profits—and the necessity for being protected against selling prices insufficient to guarantee a fair profit were a few of the urgent reasons given for the installation of cost accounting systems. "The government does not want anything that is not fair, but if you do not know what is fair from your standpoint it is hardly to be expected that the government will know more about your undertaking than you do yourself," said Professor Martin in speaking of the federal tax.

Speaking upon the work of the extension department of the University of Nebraska, Professor L. M. Chase showed how the work of that department tended to enlarge the market for burned clay products. Free drainage installations, he stated, are made where advisable, in order to start the farmers thinking about drainage. Installations of this character are invariably followed by more drainage in the surrounding communities. Similarly, supplying plans for farm homesteads has tended to create a demand for building materials. Professor Chase closed his address by repeating the report of a young man sent out by the extension department who had been working only one month when he was drafted. "If I ever get back from the front," stated the young engineer, "I am going out in some of these counties and set up as a commercial agricultural engineer. I can close up contract after contract with those farmers for modern homes, and different things for the farmstead and I will get my share of the business when it comes to building on the farm."

Another discussion on advertising then ensued in which it was urged that the members of the association carry on individual campaigns to support the advertising done by the association. Mr. Farrens at this point read letters from many places in the State of Nebraska requesting information and plans for houses, barns, storage tanks, hay houses, well houses, milk houses, garages, chicken houses and many other farm requirements as well as several inquiries from cities in the state, to indicate the dormant demand that might be awakened by advertising more extensively.

THREE CENT ASSESSMENT CONTINUED

On the following day, President Koehler called the session to order at 9:30 a. m. with twenty-three members present at the opening hour. Secretary Ringer submitted a report of the financial affairs of the association, upon the conclusion of which it was decided to continue the three-cent assessment with the privilege that if in the judgment of the committee and those present at the next meeting the operations should be extended, the assessment could be increased to five cents. It was also decided to carry on the advertising campaign as started.

The nominating committee submitted the following names for the respective offices of the Nebraska Brick and Tile Association for the ensuing year:

C. B. Hutton, president; R. W. Beasly, vice-president, and F. I. Ringer, secretary-treasurer. For the executive committee A. H. Farrens, Henry Olson, Frank Burnham, B. Koehler and Hugo Polenski. The report of the nominating committee was adopted, the president casting a unanimous ballot for the persons recommended.

It was moved and carried that the by-laws be amended in such a manner as to permit the offices of secretary and treasurer to be consolidated and held by one person.

REACHING THE FARMER

G. O. Gundlach, advertising manager of the "Nebraska Farmer," then addressed the convention on "Selling the Farmer." According to Mr. Gundlach, the total value of Nebraska farm buildings increased from 1900 to 1910 by one hundred million dollars and the constructional work on new buildings during the last year amount to about ten million dollars—a very alluring market for cultivation. Mr. Gundlach's talk was filled thruout with very constructive suggestions for developing the farm market. The interest in his talk was testified to by the extended discussion which followed his address.

When the afternoon session had been called to order at the University Engineering Building, Ballard Dunn, the personal representative of the president of the Union Pacific Railroad Co., spoke at length on the freight situation and pointed out the best means for the Nebraska manufacturers to co-operate in improving the situation.

Professor L. F. Seaton, of the College of Engineering of the University of Nebraska, then addressed the convention on "The How of Fuel Saving—Dryers," an address full of interesting and instructive points.

The third annual convention of the Nebraska Brick and Tile Association was then drawn to a close, after having proved itself a tremendous success. Those who attended reaped a rich reward in the satisfaction derived from the knowledge that real constructive work was being done. The meeting closed with an appeal by Mr. Ringer for even greater co-operation and for further strengthening of the association.

LAST MINUTE NEWS *of* FUEL CONFERENCE

(*Continued from Page* 400.)

at the front, but that undoubtedly businesses, inefficiently or extravagantly operated, would suffer death, if the war was prolonged.

When Mr. Noyes' remarks were concluded, the chairman of the joint committee discussed the arguments that he had set forth in the light of their being impractical in their application to face and common brick plants which might not be in a pool for manufacture and distribution, or that conservation of fuel by pooling was undoubtedly to be accomplished in certain localities, but that in the judgment of the committee, no set plans for pooling in an extensive way would be possible within the legal limits which it appeared necessary to recognize.

Considerable technical testimony was then heard as to relative efficiency in plant operation. Mr. Noyes appeared to be satisfied that the solution of his immediate problem lay in the general direction of pooling for common brick, and a curtailment of some kind in face brick production, accompanied by pooling in those localities where conditions justified it. On this basis, he asked for separate hearings with the common and face brick manufacturers that afternoon. He also expressed a desire that the face brick committee (not the joint committee) should give consideration in the intervening time to the possibility of shaping recommendations for face brick manufactures to conform to the general ideas expressed in the morning conference. The face brick committee had a few hours in which to discuss the entirely new case, and its conclusions are contained in the revision of the previous recommendations, which follows:

REVISED RECOMMENDATIONS FOR FACE BRICK

Following suggestion of this morning, the war service committee of the American Face Brick Association has conferred as to the possibility of formulating a policy of curtailment in manufacture by plants consuming more coal per unit than others and believes that no general plan of this character is practical because there is no wide difference in the consumption of fuel on face brick plants making the same character of material.

We, therefore, believe the following suggestions given you this afternoon are the most practical we are able to offer:

1. We recommend that in the manufacture of face brick the consumption of fuel be reduced 33⅓ per cent as compared to the amount consumed in 1917.

In exceptional cases in which plants suffered severely in 1917 on account of fuel, labor and transportation conditions, the administrator should permit the estimate of curtailment to be based on the manufacture of 1916.

Also, in cases where plants have changed or can change their manufacture to fire brick or clay products other than face brick, the amount of curtailment of fuel should only be to the extent of the regulations applying to those particular lines.

2. That this curtailment be made daily, periodically, or by shutting down individual plants where concern operates more than one, at the option of the manufacturer; that credit for curtailment from January 1, 1918, be given.

3. We recommend that this order be universally enforced irrespective of the kind of fuel used.

4. That the fuel administration enforce corresponding curtailment upon all competitive materials.

5. This suggested curtailment, meaning the plants will operate on a 50 per cent. of normal capacity, is so drastic that governmental sanction of pooling in production and distribution is necessary in localities where conditions would so justify.

6. The above suggestions are based upon present conditions and are made with the understanding that if conditions change, a further conference will be held.

AFTERNOON SESSION

At the resumption of the hearing in the afternoon (confined to face brick only), after the above statement had been presented to Mr. Noyes, the argument as to comparative plant efficiency in the matter of fuel consumption was continued. The best judgment of the face brick committee was that fully 95 per cent. of the face brick production is burned in typical kilns, and the actual burning cost of same would not vary more than 10 per cent. Despite the earnest assurance by some of the best authorities on plant operation in our industry, Mr. Noyes appeared reluctant to depart from the theories apparently given him.

Mr. Noyes was pointedly asked for the governing principles upon which the Fuel Administration would seek permission from the Department of Justice for a pooling arrangement. Mr. Noyes confessed there were no governing principles, and was of the opinion that while pooling in production might be regarded as legitimate, the matter of pooling sales and distribution was an entirely new departure, and it was not known whether the Department of Justice, or even the Fuel Administration itself, could consistently lend approval to such procedure. Mr. Noyes assured his interest in such matters, however, if they meant real conservation in the consumption of fuel, but that each permission granted would have to be treated on its own specific merits.

With face brick production reduced, at present, to a point between 50 per cent. and 75 per cent. of normal, Mr. Noyes was unable to see how any material saving in fuel could be accomplished by a 33⅓ per cent. curtailment of the production of 1917. Neither Mr. Noyes nor the face brick committee would forecast what the demand for face brick would approximate in 1918, and it was impossible to argue pro or con as to how much fuel would likely be saved by an order based on the suggestions of the committee.

WORKING ON PRIORITY SCHEDULE

As a result, Mr. Noyes did not wish to issue any order at present with respect to face brick, but instructed his assistant to tentatively place face brick in "Class No. 3" for fuel priority. He stated that the various governmental departments, including transportation, were then working upon a classification of industries, and altho not yet agreed upon, the tentative outline of commodities to be given preference for fuel, transportation, etc., are as follows, and in the order named:

1. Commodities necessary to the maintenance of life.
2. Munitions.
3. Peace time necessities.
4. Luxuries.
5. Everything else.

BE PREPARED

The joint committee left Washington with the feeling that the previous situation of uncertainty has not been relieved; that altho the committee is neither encouraged nor discouraged, it behooves the clay products manufacturer to critically watch every movement for the protection of his vital interests; that the associations should be ready to collect, and each individual manufacturer ready to quickly give any vital statistics which may appear to be necessary to controvert fallacious theories.

* * *

"Natco" on the Farm

This is a booklet in which *Brick and Clay Record* readers will be immensely interested because it shows to what varied uses hollow tile may be put on the farm, and gives pictures of the completed buildings in which hollow tile plays the most important part.

The "Natco" home is first described in detail, showing the comfort and safety obtained in the house, whose walls are built of hollow tile, and whose outside surface is made attractive by the use of stucco. Then follows the "Natco" barn, hog house, poultry house, milk house, garage, corn crib and silo, all built of glazed hollow tile, very attractive in appearance and adding much to the beauty of the farm. Construction details of all these buildings are given with illustrations, and a table of sizes, weights and capacities of the "Natco" silo follows the description.

The booklet also devotes a page to the description of "Natco" glazed drain tile, and the benefits to be derived from the use thereof, as well as a page giving directions for the stuccoing on hollow tile.

* * *

The Great Wail of China

Bricklaying is a unique industry in that the fundamental principles or methods are the same today as they were thousands of years ago. This may be seen in the old ruins or remains of the dwellings of the ancient Egyptians, and in the Great Wall of China, which was built in the third century B. C., and which is undoubtedly the best preserved piece of ancient brickwork. Beginning with the sea, it goes westward for more than 1,400 miles, over valleys and mountains, averaging 20 ft. in height. Today the brick of the parapet are as firm as ever, and the edges have scarcely a break. It is very probable that the method of making brick by burning blocks of dried clay was originally discovered in this part of Asia.

* * *

The loss of men from the potteries of the country, due to the draft continues, but not on as large a ratio as some months ago. That inroads are being made on working forces, however, is admitted by all of the manufacturers.

RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

This, the Sixteenth Installment, Shows How Class and Commodity Rates Conflict and Explains the Application of Each Under Various Conditions

By Sydney A. Hale

Synopsis: Preceding articles have dealt with general rate standards and the methods of rate construction and tariff interpretation. While rates properly published have the same legal effect as if imposed by a special act of Congress, under certain conditions, rates even when so promulgated, are illegal as a matter of law, without consideration of the question of fact relating to individual charges. This does not mean that while such rates are published, they may be ignored, but the burden of justifying the existence of such charges is upon the carrier.

THE FAIR MEASURE of the reasonableness of a joint thru rate that exceeds the combination between the same points via the same route will be held to be the lowest combination that would lawfully apply if the joint thru rate were cancelled.—Thru Rates to Points in Louisiana and Texas, 38 I. C. C., 153.

CONFLICT BETWEEN CLASS AND COMMODITY RATES

In an earlier article in this series,† the rule was laid down that a commodity rate superseded a class rate, except where provision was made in one and the same tariff for the alternative use of class and commodity rates. This rule is inflexible. Thus, it has been held that, where a higher class rate carried a low minimum and a lower commodity rate a high minimum, the class rate could not be used, notwithstanding the fact that the charges under the class rate might be less on a specific shipment than movement under the commodity rate. If a carrier does not wish to apply the commodity rate to all shipments of the article moving between the points covered by the rate, it must cancel the commodity rate. The fact that a combination of a class and commodity rate might make a total thru charge less than a published thru rate does not permit such combination to be used in lieu of the thru rate.

On the other hand, it is lawful to publish class or commodity rates for specified mixtures when the parts of the mixture carry separate rates. A carrier might publish commodity rates on bookcases from A to B and different commodity rates on brass beds from A to B. The classification governing traffic between those points might permit mixed carload shipments of bookcases and brass beds at class rates. In that case, the existence of specific commodity rates upon the two commodities when moving in straight carloads would not bar the application of the class rate upon a mixed carload.

SPECIFIC PUBLISHED RATE ALWAYS CONTROLLING

The rule in the case of specific thru vs. combination rates follows that controlling class and commodity rates. In every instance where a specific thru rate is named it is the only legal rate in effect between the points specified, altho some combination may make a lower thru charge. This rule, in its application, is as inflexible as the class vs. commodity provision. In a case where a thru distance rate was higher than the combination of a specific rate to an intermediate point and the distance tariff beyond, it was held that the thru distance tariff should apply. In another instance, where a joint mixed carload class rate was higher than the carload rate on the heavier weighed article in the mixture, plus the less-than-carload charge on the lighter article, use of this combination was denied.

In another case, a thru rate applied via two routes, one direct and the other indirect. The latter route was not ordinarily used for thru shipments. A shipper billed his traffic locally to an intermediate point on the indirect route and, without taking possession of his goods there, rebilled from that point to destination. The combination rate applicable was less than the thru charge, but the Commission held that the local billing had not been done in good faith and that the higher thru rate should be paid.

LEGAL RATE NOT NECESSARILY A LAWFUL ONE

A rate, however, may be legal in the sense that the manner of its publication complies with the requirements of the law and the rules of the Commission and yet be unlawful in that it offends the provisions of the statute prohibiting unreasonable and unduly discriminatory rates. In the absence of extraordinary circumstances, to charge more for a haul from A to C than for a haul from A to B, plus a haul from B to C, appears to be clearly unwarranted. The Commission, therefore, long ago laid down the broad rule that a thru rate in excess of the combination of locals was prima facie unreasonable. In other words, where such a rate exists, the burden is not upon the shipper to show that it is unreasonable, but upon the railroad to prove that it is reasonable.

This expression of administrative opinion has since been written into the law. In the 1910 revamping of the fourth section of the Act to Regulate Commerce, Congress provided that it should be unlawful not only to charge more for a shorter distance than for a longer distance over the same line or route, when the shorter haul was included in the longer, but also made it unlawful "to charge any greater compensation as a thru route than the aggregate of the intermediate rates subject to the provisions of this Act."

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†See the sixth article in this series.

FOURTH SECTION RULE ON INTERMEDIATE ABSOLUTE

The rule is absolute; the only thing necessary to bring a thru rate under the condemnation of this section is that there be intermediate rates subject to the Act which make a lower combination. It, therefore, becomes important to inquire what rates are subject to the provisions of the statute. The answer may be given in broad terms as any rate that is a factor in interstate commerce. It necessarily follows that a rate to be considered must be filed with the Interstate Commerce Commission. Because of this, a state rate may not be used in an interstate combination unless that rate is on file with the Commission.

To illustrate: a thru rate from Chicago to Des Moines, Ia., may be greater than the sum of the rate from Chicago to Davenport, or some other Mississippi River crossing in Iowa, and the rate from such crossing to Des Moines. The rate from the crossing to Des Moines is, of course, a state rate. If that rate has been filed with the Interstate Commerce Commission to be used in constructing interstate rates, then the higher thru charge from Chicago would be unlawful on its face. If not, the question of the reasonableness or unreasonableness of the thru charge would pass from one of law to one of fact.

The practical test in determining whether a rate falls under this provision is to consider what and how the charges would be constructed if the specific thru rate were cancelled. What would be the lowest combination on interstate traffic that might then lawfully be used? The answer to the last question measures the lawfulness of the thru rate.

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New Brickmaker for Cleveland

Another name has been added to the roster of clay products manufacturers in Cleveland. He is a big fellow —forget just how many pounds the proud father, Lawrence B. Koblitz, did say, but we know he is going to make things hum. His application for membership was handed in on January 23, this year, and the big bouncing baby boy is right in line to make his dad hustle for that job of his. He is going to be signin' his checks as treasurer of the Barkwill-Farr Co. pretty shortly, if his dad does not read the handwriting on the wall, and keep his toe on the mark.

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Urges Use of More Tiling Machines

The cost of tile and labor have advanced from 15 to 25 per cent. above what they were a year ago at this time, according to Professor E. R. Jones, of Madison, Wis., and secretary of the Wisconsin Drainage Association, in a statement prepared for the convention of the Wisconsin Clay Manufacturers' Association, held recently in Milwaukee. At first thought this may discourage farmers from using drain tile, but when they remember that the crops that can be produced as the result of drain tile have advanced more than 25 percent., it is evident that the profits of drainage will be greater during the coming season than ever before.

The labor question will be solved fairly well by the use of more tiling machines. Stony or soft areas, where the tiling must be done by hand, may have to be postponed in some cases because of lack of labor, but on the firmer lands one man with a tiling machine can do as much as four men with a spade. More tiling machines are needed.

In the general congestion of freight traffic during the past season, drain tile has suffered with other commodities, states Professor Jones, who believes that there should be concerted effort to give drain tile the right of priority in shipment over other commodities, because of its importance in the production of more and better crops. A communication from the Wisconsin association to J. A. Reeves, Streator, Ill., who is chairman of a committee at work on this problem, would help, it was suggested. Tile manufacturers themselves can help the situation by urging farmers to buy their tile for shipment this winter or during the early part of next season. When the crops are moving after September 1, and coal is being hauled, shipping is more congested.

With the increased use of tractors, there is greater need of tiling out the narrow wet strips which have hitherto been dodged in cultivated fields. This means that many farmers will want to lay probably only a quarter or half a carload of tile. They cannot buy an amount so small directly from the manufacturer, because of high freight rates. The other alternative is to have a local dealer buy tile by the carload and retail it in small lots to the farmers. In some cases where this is done retailers have demanded such exorbitant profits that tile drainage has been discouraged. Tile manufacturers can render farmers a valuable service by requesting from the retailers the assurance that they will not demand unreasonable profits.

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Harvesting Brick from the Field

The Chinese harvest a funny sort of a crop just after they gather their rice yield each year. No one ever thought of growing brick, but this strange trick they perform in Far Cathay. Where the soil is of the right sort and texture, the rice stubble is shaved off clean with the surface of the field, and a knife is run thru the dirt the length of the area where brick are to be harvested. In this way the plot is cut into narrow strips of equal width. A trench is dug next to the first strip, and the strips are cut up into sections, brick-size. A tool made for the purpose is then run along under the "green brick"—the workmen walking along in the ditch—and the brick removed and laid out to dry in the sun. After the sun bakes the brick hard they are stacked in ricks for further hardening treatment. It would seem that this is a case of making brick without straw, but such is not the case. Brick cannot be grown in a radish patch, and there is a reason for harvesting them from rice fields. The many fine, tough roots of the rice plants make a dependable binder, and without these the brick would be nothing more than squares of hardened clay.

⁂

Watertown, N. Y. to Have Model Village

The government is planning the erection of an entire village near Watertown, N. Y., to house workmen on the way to take positions with the New York Air Brake Co., engaged in the manufacture of munitions.

The houses are not to be of a uniform construction, nor will the streets be laid out at right angles, an effort being made to give it the appearance of a model village. Dormitories are to be built for the single men, each housing forty workers. Every married man with a family will have a separate house.

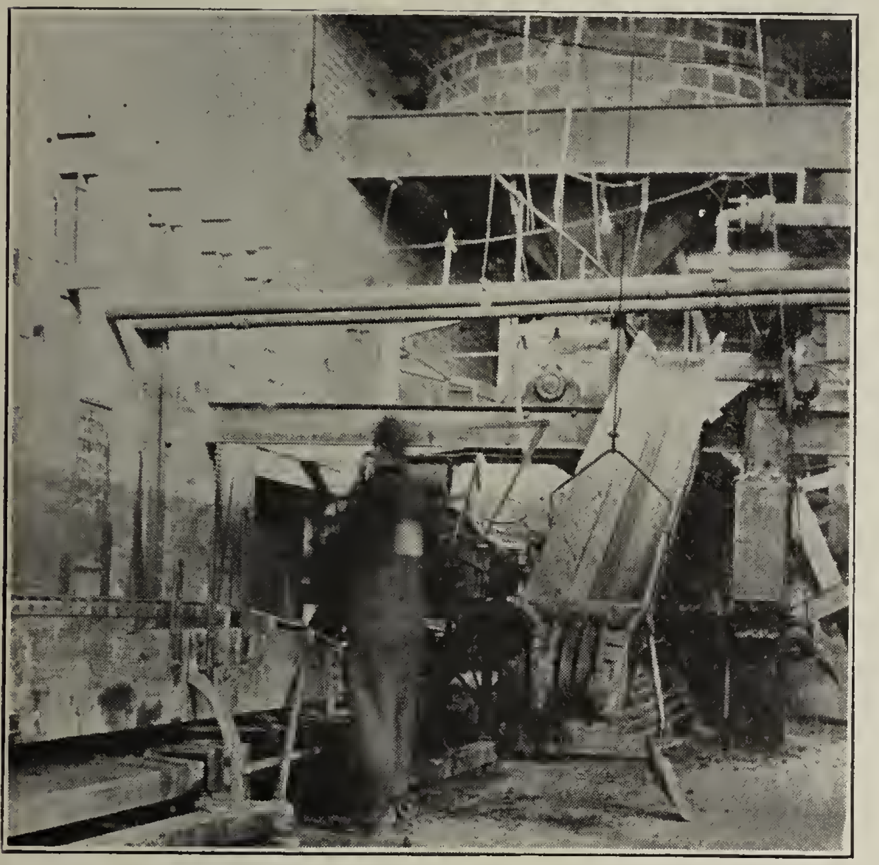
It is estimated that more than 5,000 additional workmen are soon coming to Watertown and it is believed that the cost of the village will be $1,500,000 or more. Government housing experts will soon come to the northern New York city to look over the sites and start work.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Pleasant Working Conditions Essential

Many things about the average clay plant contributes toward the difficulty of holding the labor in any but worse than normal times. Other factors than a supply of labor influence most is the location of a plant. Shale deposits are not necessarily located in proximity to the electric lights and picture shows and the drift of population is never toward the outlying community. Hence, special inducements must be offered to the workman in order to keep him on the plant. Some of these are larger salaries, better hours, lighter work, pleasant working conditions, etc.



Plenty of Light and Cleanliness is to be Found in this Machine Room of the Adel (Ia.) Clay Products Co.

However, pleasant working conditions are anything but normal on the average clay plant. How many machine rooms have you gone into where you saw good light, either natural or artificial? In many machine rooms you find conditions very dusty and dark with perhaps only a smoky torch furnishing the necessary light to enable a man to see his work. It is not at all exaggerating to say that there actually are plants were the light is as bad in the machine room as in the ordinary coal mine. Efficiency does not thrive in those conditions and greater efforts should be expended to make the surroundings about the clay plants cleaner and lighter and thus not only gain satisfied employes, but also better workmanship.

The view pictured here shows a clean and well lighted machine room of the Adel (Iowa) Clay Products Co., at which plant pleasant surroundings are everywhere in evidence.

Belt Speed and Pulley Size

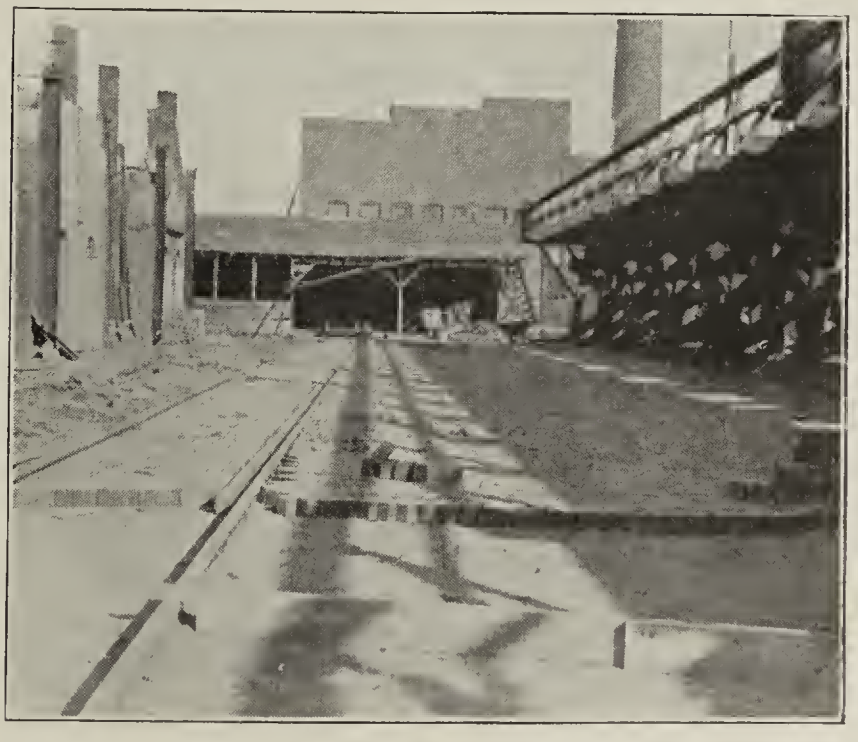
Various factors are used to determine the size of pulley best suited for a given drive. Six hundred to 1,000 feet per minute per one inch of width for a four-ply belt on 180 degree arc of contact indicates the range of speed used by many engineers. One thousand feet per minute per one inch of width per horsepower is used by Frederick W. Taylor and will check out very satisfactorily in practice. The pulley diameter should be large enough to protect the belt from damage, and deterioration, due to excessive bending and should increase with the thickness of the belt. Some authorities claim that nine inches is the smallest diameter on which a four-ply canvas belt should be used; however, it is safer practice to use not less than a twelve-inch pulley for a four-ply belt. The most efficient belt speed is from 4,000 to 4,500 feet per minute, and the best belt centers from twenty to twenty-five feet, nothing being gained by increasing belt centers.

⁂

Every Yard Should Be Paved

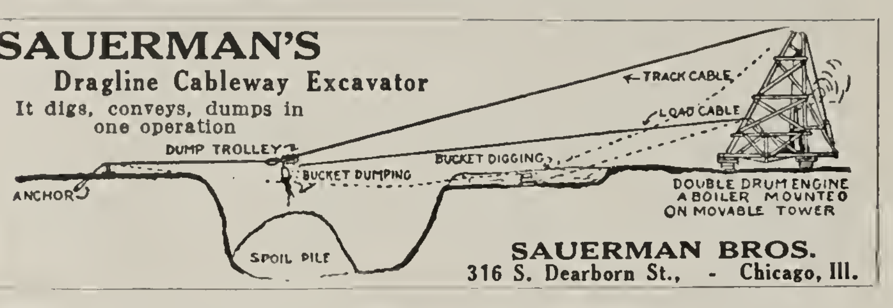
Spring weather, accompanied by thaw and rains, makes the unpaved brick yard an anything but pleasant place to work in. A large number of kiln yards are just the bare ground, unpaved and in many places soft. This is objectionable, particularly around the kilns, and a source of much discomfort to those who have to work at these points.

When using round, down-draft kilns, the coal is dumped against the kiln wall every alternate furnace and most of us are familiar with the holes that soon appear as the fireman gradually digs in under the pile. The dirt gets mixed in with the fuel and causes clinkers and a poor

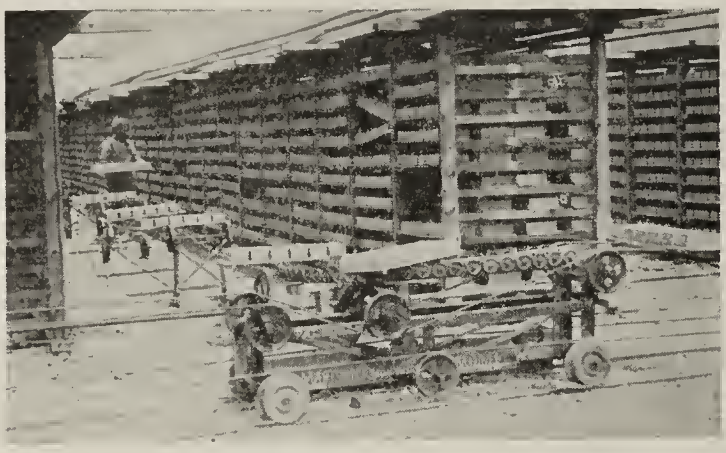


A Start in Yard Pavement is Being Made at the Plant of the Flint Brick Co. at Des Moines, Ia.

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U.S.A.
Correspondence solicited



SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation
SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.



The A-B-C of Cost Saving
—
Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"
MARINETTE IRON WORKS
MARINETTE, WIS. C. J. ANDERSON, Prop.

IN THE HEART OF THINGS

The House of Taylor
Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business
157 Pleasant Rooms with Private Bath
$2.50 Per Day
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day
Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate
400 Baths
600 Rooms

ABSOLUTELY FIREPROOF
HOTEL CHELSEA
West Twenty-third Street at Seventh Avenue, New York City.
500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
Room with private bath, $2.00.
Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
To Reach Hotel Chelsea.
From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

fire. In rainy weather, these holes become filled with mud and water, producing conditions not at all conducive to the best efforts on the part of those laborers who have to contend with it—nor to the best interests of the ware being burned.

Pave your yard with seconds, bats and culls, slushed with a cement grout. It will make far more pleasant conditions on your plant, which means better workmanship and satisfied employes. The investment of a few dollars in labor and materials for this purpose will pay for itself in a comparatively short time.

* * *

Kiln Setting

The setting of brick in the kiln is an all important factor in the quality of the finished product. It determines whether, under certain burning conditions, the fact of the product will be of clear color or flashed and whether the flash covers part or all of the face. It also determines to a great extent how much of the ware will be marked in the burning.

The tightness or looseness of the setting has a great effect on the burning qualities of many kilns. By setting too tight, in an effort to crowd a large number of brick into a kiln, the burning period is lengthened, out of all proportion to the gain in holding capacity. The draft is cut to such an extent that "water settles" and and black cores develop; the fuel consumption is unreasonably high, due to the length of the burn, and overburned brick at the top and underburned brick at the bottom are the result. On the other hand, where the setting is too open, space is lost that is valuable, and a waste of fuel results due to the heat passing thru too rapidly and escaping too readily to the stack.

Upon the proper setting of the kiln is dependent the regulation of draft conditions which are essential to best burning conditions. These things must be taken into serious consideration by the superintendent who would bring his plant to the highest point of efficiency.

* * *

Points to Watch in Changing Product

In those localities where the market for drain tile is good while the face brick market is poor, there is a tendency on the part of the manufacturers of the latter material to try their hand at making drain tile. Naturally, the simple thing to do when the decision is made to turn out a small tonnage of drain tile, is to convert the brick machine into a hollow ware machine by simply buying a few dies constructed so as to fit the front of it. Right here the trouble begins, for a brick machine and a hollow ware machine are alike in appearance only.

Brick machines are built with tapered barrels or fronts. This taper is designed for the express purpose of compressing the clay into as solid a mass as possible, in order that a dense bar may emerge from the die. In addition to tapering the barrel, in or to get the maximum bar density, the pitch of the auger in the nozzle is only increased enough to keep the area constant. This increase in the density of the clay is only prevented from doing injury to the barrel front or die, or else relieving itself thru the hopper, by the fact that a brick die presents a fairly large opening, roughly, forty square inches.

The modern auger hollow ware machine has a straight barrel, generally a continuous screw auger, the pitch of which is constant or increases toward the front, and a force feed attachment. Sometimes instead of the force feed, a pug mill is attached which serves the same purpose. This machine does not compress the clay in any way except in front of the auger. The auger merely solidifies and expresses it to the die opening, giving at the same time the greatest speed with the least possible consumption of power.

The differences between the brick machine and the tile machine, altho seemingly slight, are really great, in fact, great enough in many cases to make the difference between success and failure. Considerable hollow ware is being made on ordinary brick machines, but when they are used, the many troubles which are encountered when even the most perfect equipment is used, are magnified a hundred fold. While we contend that it is not perfectly ethical for the face brick manufacturer to change over to the manufacture of drain tile we do hope if he does that he will take the above facts into consideration before making the change.

* * *

Chicago League Bids for Large War Projects

In order to improve conditions in the construction field and obtain, if possible, for Chicago, some of the large war projects, such as shipyard, warehouse, and essential war plants, there was organized by material dealers, architectural and labor organizations, the Co-operative League of the Building Trades and Industries.

It was the consensus of opinion that some means should be found whereby work can be provided for the idle in the building trades, thru bringing to the city some of the big government projects now being handled in a number of the large eastern cities not as well equipped as Chicago to handle them.

Thomas Carey of the Carey Brick Co. was elected president; Simon O'Donnell, president of the Building Trades Council, vice-president; L. D. Binyon of the Kimbell Brick Co., secretary; Charles Gindele of the Building Construction Employers' Association, treasurer. An executive committee, of which Mr. Carey is chairman, was appointed to bring to the attention of government officials at Washington, the claims of Chicago for consideration.

* * *

Oregon Clayworkers to Meet in March

The fourth annual meeting of the Oregon Clayworkers' Association will be held in Portland, Thursday and Friday, March 7 and 8 next. The place of meeting and program are to be announced later.

The meeting in Eugene last year was well attended and a still larger crowd is anticipated for the Portland meeting. The association has been organized for mutual benefit and exchange of ideas and in the past few years has put the Oregon clayworking industry on a better basis than it ever has been. Problems of vital interest to all clay products manufacturers will be taken up at the March meeting and it will be to the benefit of all members to attend.

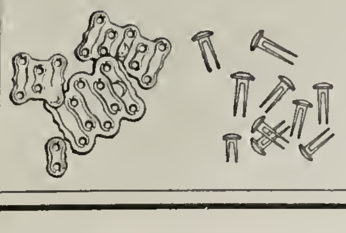
* * *

The Onondaga Pottery Co., Syracuse, N. Y., has had plans prepared and awarded contract for the construction of a new addition to its kiln building to cost about $7,000. Dawson Bros., Syracuse, are the contractors.

Coal and labor scarce.
Demand for greater production.
Machines trying to do their bit.
Handicapped by breaking Belts.
"Slacker" methods of belt joining.
Don't persist in "getting along somehow."
Efficient service must be considered.
It's your duty to ask about

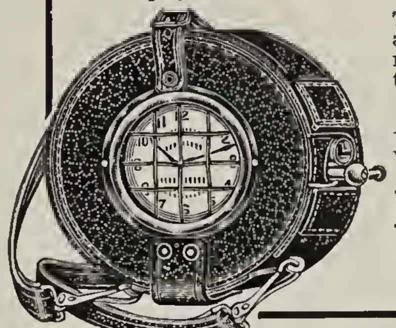
CRESCENT
BELT FASTENERS

Ask us, your supply dealer or the man who uses them!



CRESCENT BELT FASTENER COMPANY
381 Fourth Ave., New York, N. Y.

Deduct Five Per Cent from the Base Rate of Your
FIRE INSURANCE PREMIUMS
If your rate does not exceed five cents on every $100.00, the saving you make by installing a
HARDINGE WATCHMAN'S CLOCK
will pay for the cost of the clock the very first year.



Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

Approved by Nat'l Board of Fire Underwriters.

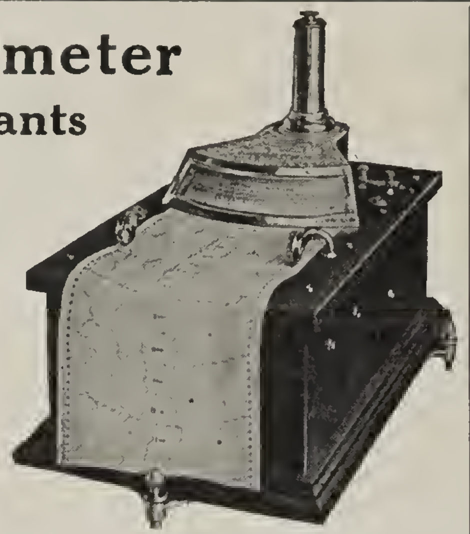
HARDINGE BROS., Inc.
1760 Berteau Ave., Chicago, U.S.A.

Padded Gears
If You Use
Rino Gear Shield
the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,
The Ohio Filler and Shield Co.
Columbus - - - Ohio

Hill Friction Clutches
Collar Oiling Bearings

Hill Friction Clutch Pulley Smith Type
(Patented)

and
Complete Power Transmission Machinery Equipments
Catalogs upon Request
The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street



Price Pyrometer on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

John Harms, general manager of the American Face Brick Co., Cleveland, Ohio, has returned from a business trip to Columbus.

C. E. Carpenter, superintendent of the Whitewater (Wis.) Brick & Tile Co., has resigned his position with that concern to accept a similar position at the plant of the Postville (Iowa) Clay Products Co.

H. S. Hamilton, president, and Lewis Sprague, general manager of the McArthur (Ohio.) Brick Co., were in Columbus about the middle of February calling on manufacturers and jobbers.

Ernest M. Graham, who for a number of years had been associated with his father, Fred J. Graham, in the brick manufacturing business at Lynn, Mass., died in a hospital in that city January 31, following an operation for appendicitis. He was twenty-seven years old and a native of Lynn.

Gustave Rader, an inventor, and manufacturer of clay products, died of pneumonia, at his home in Brooklyn, N. Y., on February 14. Mr. Rader was 55 years of age. He was born in New York, but for many years lived at Montclair, N. J. His father, the late Gustavus W. Rader, was the first man in this country to make sewer pipes from clay. it is claimed.

A sample of how quickly the boys get "over there" is witnessed in the receipt of a picture post card from Lieutenant Jack Herbert, formerly of the Barkwill-Farr Co., and now with the aviation corps that recently landed in England. Herbert writes J. J. Shea, assistant sales manager of the Barkwill-Farr: "The first Sunday on foreign soil somewhat different than in the States. Send a few lines."

Edward B. Bassett, 52 years old, president of the old East End Brick Co., which has not been active for the past two years, and former banker of Litchfield, Ky., recently died of pneumonia at his home in Louisville, Ky., following a short illness. Shortly before his death he was appointed assistant secretary of the Board of Public Works of Louisville.

L. D. Binyon and James A. Hogan, of Chicago, who are known in brick circles as the "Brick Dust Twins," were in Columbus, Ohio, last week in conference with Emmet Howard, of the Columbus Fire Brick Co., which is the Columbus agent for their company. The "Twins" control the plant formerly known as the Columbus Brick & Terra Cotta Co., at Union Furnace, Ohio, now called the Union Furnace Brick Co.

Thomas M. Goodwin, of the Goodwin Tile and Brick Co., died at his home in Des Moines, Iowa, February 18. Death came after a five days' illness of pneumonia and was very sudden. Only a few moments before he passed away a consultation of physicians had been held and it was thought that he had passed the crisis and would recover. Mr. Goodwin has been associated with his brothers, Robert, Dan and William J. Goodwin, in the brick and tile industry for many years. The company operates plants in Des Moines and Redfield, Iowa,

F. J. Craycroft, a well known brick man of Fresno, Cal., visited San Francisco and the yards in that neighborhood last week.

California

The Bond-Bryce Brick Co. is a new concern, recently organized in King City, Cal., by William G. Bryce and W. G. Bond.

A good deal of fire brick is being shipped from the Bay district to Portland, Ore., for use in the shipbuilding yards in the neighborhood of that city. So far as known here, Washington yards are supplying the demand for this kind of brick at the ship yards in Seattle, Tacoma and other points on the Sound.

Louis Steiger, of San Francisco, Cal., whose pottery works burned last year, is opening up what appears to be a fine vein of kaolin suitable, it is believed, for making the best quality of china, in the Santa Cruz mountains, south of this city. Mr. Steiger has put a small force of men to work opening up the ground, and says that the indications point to a good sized deposit.

Eugene Corrigan, of the Stockton Fire & Enamel Brick Co., San Francisco, Cal., reports that his company is making excellent progress with the new kilns and machinery it has been installing for some time for the purpose of making magnasite and chrome bricks. He says the company will be ready in about sixty days to market these brick and that already it has large orders which will absorb a good percentage of the output.

The California Magnesite Co., San Francisco, Cal., which was recently formed to do business in the state, has secured the permission of the corporation department of California to sell 500 shares of the company's stock to E. W. Pierce, R. M. West, Milton Newmark and R. W. Murphy, at par. This will net the company $5,000, and on the showing made to the Commissioner of Corporations this is enough to establish the business.

The Coast Art Marble Co., of San Francisco, Cal., which will make art tile work as well as marble, has received a permit from the Commission of Corporations to issue stock for the purpose of financing its business. Seven thousand shares at a par value of $1 will be sold at a ten per cent. discount under this permit and the proceeds devoted to financing the new enterprise.

The first white terra cotta blocks which will form more than half of the facing of the new Bank of Italy building, Fresno, Cal., have been laid and the main walls of the building will be rushed, according to R. F. Felchlin, architect and builder. The concrete work is practically completed on all the floors and the brick and terra cotta will be placed as quickly as the material can be secured. It is expected the building will be completed before mid-summer.

The city council of Los Angeles, Cal., has adopted modified specifications for the use of either cement pipe or clay pipe in the construction of sanitary sewers in the city of Los Angeles. This was the measure which recently caused a fist fight between S. J. Coffan, Jr., of the Pacific Sewer Pipe Co., and Councilman Reeves. The proceedings at which the matter was settled was peaceful. Under the modified specifications the name of the manufacturer may be indented on the pipe, and six-inch pipe

ORIGINAL Boss SYSTEM
COMMON SENSE APPLIED TO
Drying and Burning
ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

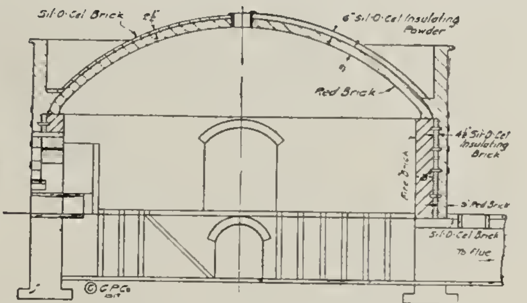
Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH
SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK REG. U.S. PAT. OFF.
INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

CELITE PRODUCTS COMPANY
NEW YORK 11 Broadway. CHICAGO Monadnock Bldg. PITTSBURGH Oliver Bldg. LOS ANGELES Van Nuys Bldg. SAN FRANCISCO Monadnock Bldg.

"LOXALL"
A Better Hollow Block

It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address

J. E. EXNER
602 Lincoln St. Coffeyville, Kas.

Uniform Heat

In Kiln or Dryer is essential to uniformity of product.

BRISTOL'S

Recording Pyrometers

Record the temperatures maintained. The accumulated knowledge secured by these records enable you to secure the maximum in production and quality. Write for Bulletin 205.

The Bristol Co., Waterbury, Conn., U. S. A.

STEVENSON'S PANS AND SEWER PIPE PRESSES

are our leaders in a complete machinery line. Brick, tile and pipe plants furnished complete.

STEVENSON Peerless Machinery

The Stevenson Company

Wellsville Ohio

***But*—You Can't Do It!**

You can't get the kilns unloaded on time—You can't prevent accumulated demurrage on cars—You can't have satisfied hustling wheelers—

UNLESS

You have a fleet of INVINCIBLES

Look!

IT IS BALANCED

The axle is under the load—NOT at one end of it.

It slides—down the runway—and the hind legs don't rip and tear.

It Rides Its Load

THE TORONTO FOUNDRY AND MACHINE CO.
TORONTO, OHIO

may be made in either 2-foot or 2½-foot lengths. The adoption of the modified specifications clears the way for the readvertisements for bids for twenty-six or more sanitary sewer jobs which have been held up pending settlement of the controversy. The jobs represent sewers totaling 86,267 feet in length.

The Southern California Clay Products Co., which was incorporated a short time ago and intends to go into the manufacture of clay products at Vernon in Los Angeles, Cal., has secured the permission of the state corporation department to issue securities in sufficient quantity to establish its business. The Clay Products Co. made a careful report to the Commissioner of Corporations, showing the value of its holdings, or rather the holdings which it desired to legally acquire, and also a statement showing what capital it needed and how it proposed to expend the money arising out of the sale of its stock. On this report the commissioner issued a permit for the company to issue 20,000 to R. B. Keeler in exchange for the clay deposits in San Diego county, to issue 4,500 shares to Mr. Keeler, E. A. Maddison and W. H. Finger for services rendered, and to sell to the same persons 2,270 shares of stock at one dollar a share. These proceedings give the company legal standing and capital to continue the business which was previously conducted by R. B. Keeler.

While this is usually the slack season for building brick it is, perhaps, somewhat more so this year, on account of the energies of the whole people being bent to winning the war against Germany. But the very thing that makes for slackness in this line of the trade is pushing the makers of fire brick to the limit of their capacity to keep up with the demand. The whole Pacific Coast has gone into the ship building business, and the plants which were here before the war have been greatly increased in size and their number multiplied over and over again. In every one of these plants there is an immediate demand for fire brick for boiler foundations. And this part of the demand for fire brick is greatly increased by the number of new shops, not directly building ships, but furnishing parts of the material that goes into ships. To this demand, boiler foundations for new shops and ship building plants, is now being added the demand for fire brick to go into the ships themselves.

Only recently the Stockton Fire & Enamel Brick Co., San Francisco, Cal., sold nearly 300,000 fire brick for ships to the Moore & Scott plant in Oakland, which is beginning to lay keels, and a like amount to the Pacific Coast Shipbuilding Co., which is rushing its plant to completion and will not lay its first keel until some time in March. Both of these plants will need large additional quantities of fire brick for the contracts already given them by the Government. Mayor Rolph, of San Francisco, is planning to put in new ship yards in Alameda; the Union Iron Works is greatly increasing its plant in the same city, and the Hanlon yards in Oakland is changing its plant from wooden to steel shipbuilding. All these demands come from concerns which are new or are making new enlargements. Add to these the demand from the older shipyards and it is plain that the fire brick men are in for a prosperous year.

Colorado

Articles of incorporation of the Scott-Wynn Brick Co. were filed in Denver, Colo., by Wm. M. Scott, Loyal L. Wynn and Nora A. Scott. The company will operate its brick and tile plant south of Colorado Springs, and is capitalized for $10,000.

Connecticut

The little town of Berlin, Conn., the center of the brickmaking industry in New England, has answered the challenge of Berlin, Germany, by sending ninety-one men to France to fight the Kaiser's forces. Some time ago a movement was started to change the name of the little Connecticut town and failing in this, a leading citizen suggested that one way to let the world know that the town was truly American, despite its name, was for every man and woman who could to go into the service of the country and there has been this most gratifying response. The number of men in the fighting forces is being added to almost daily.

Illinois

The American Refractories Co., Joliet, Ill., announce that on and after February 25, the general office of the company will be located in the Union Arcade building, Pittsburgh, Pa. The general sales office will be located at 208 South La Salle street, Chicago, and branch sales offices will be in the Equitable building, 120 Broadway, New York, and Union Arcade building, Pittsburgh where all inquiries and orders will receive careful and prompt attention.

Indiana

Potteries at Evansville, Ind., have been doing a nice business during the past month but the companies report they have been more or less handicapped by the car shortage and bad weather conditions. It is expected there will be a big improvement in business after the first of April. The past year was a most prosperous one for the potteries of Evansville.

A big contract, including fireproof building materials, brick, etc., will probably be let within a few weeks at Jeffersonville, Ind., for rebuilding the Indiana Reformatory, which was burned early this month at a loss of approximately three quarters of a million dollars, including several of the trade school buildings and cellhouses. The reformatory was of brick construction, the walls being of massive design, and much of the old work will be allowed to stand. Common brick will be supplied by the reformatory brick plant, which is outside of the main walls, and which was not damaged in any way by the blaze.

Iowa

At a recent meeting of the stockholders of the Postville (Iowa) Clay Products Co. it was decided to resume operations as soon as the weather permits.

The Audubon Clay Products Co., whose Iowa plant is maintained in Audubon and whose principal place of business is at Pierre, S. D., has filed articles of incorporation in Iowa with a capital stock of $100,000.

The Iowa division of the American Face Brick Association held its regular meeting in Des Moines, February 15. Practically every face brick manufacturer in the state was present. Almost the entire attention of the day's meeting was given over to coal and war problems.

Kentucky

The Coral Ridge Clay Products Co., Louisville, Ky., has been operating its local plant at capacity and reports that the car supply is much better, and that it is having very little difficulty in obtaining cars to make shipments,

Tycos

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.

Tycos Pyrometer
High Resistance Wall Type Indicator.

In selecting the proper equipment for the measurement of high temperatures, progressive manufacturers invariably choose *Tycos* Pyrometers.

May we send you our catalogues which explain these *Tycos* Instruments fully?

Taylor Instrument Companies
ROCHESTER, N. Y. 60

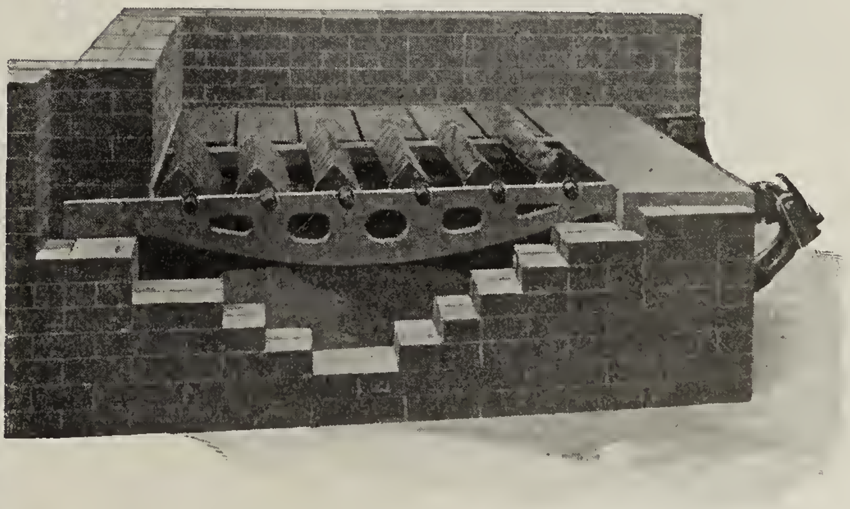
The Other Way To Save Fuel

Is To Use Cyclone Grates Under Your Boilers

Don't put all of your thot on the saving of kiln fuel, particularly when a small effort will secure these grates, and a minimum saving of 10% is guaranteed.

They minimize labor, they save fuel and we guarantee it in writing. Write us.

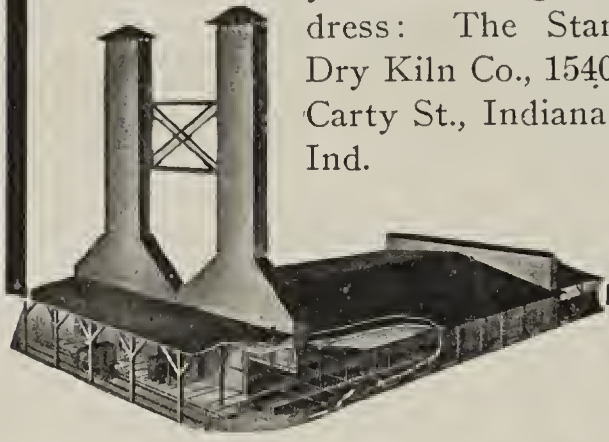
The Cyclone Grate Bar Co.
Buffalo, N. Y.



Did YOU See Us at the Convention?

If you didn't meet The Standard Brick Drier "face to face" at its home in the Convention City, we both missed something.

But Uncle Sam is still carrying the mails and we have some mighty interesting printed matter ready to send you. A line from you will bring it. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

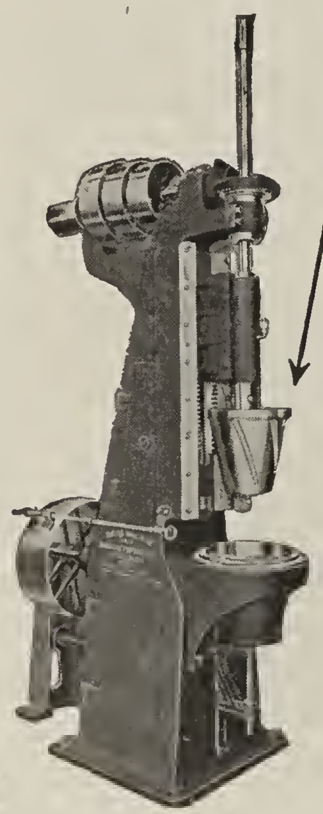


Why Don't You Make Flower Pots

It's a big field with very little competition, and it makes a profitable side line for any plant making brick or tile products.

Start right by adopting the

Baird Flower Pot Machine



Simple in operation, accurate in its work, and from six to ten times as rapid as old methods.

Send us a sample of your clay—we'll show you what our machine will do for you, and send you full information.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.

or coal to keep the plant running. The labor situation in Kentucky has been rather bad, but this concern has maintained practically full forces without much difficulty.

Kentucky brick plants suffered less from the five day closing, and Monday closing orders of the fuel administration than plants in other lines, due to the fact that the closing orders came at a time when things were generally quiet, and about the only coal required was for finishing out fires in kilns which had been started. The fuel administration raised no objections here, as it would have been impossible to let a kiln go cold after fire had once been started.

Delivery of brick to river towns in Kentucky this summer and during the year will be considerably handicapped by the shortage of river craft and barges as a result of the breaking of ice gorges all along the Ohio, and in the smaller streams of the state, the mouths of many of these small streams being used for winter ice harbors. The ice wrecked numerous barges, towboats, etc., twenty-six boats having been wrecked at Paducah, Ky., in one day, when an ice gorge let go at that point. A number of the barge lines, which have featured brick handling, suffered severe losses.

The Brick Association of Louisville, Ky., has been meeting regularly each week all thru the winter to discuss conditions, but has not taken up any special work or reforms of moment. At a meeting of the organization on February 18, a number of members expressed the opinion that the outlook was much better than it has been, altho without a number of government prospects there would not be very much in sight. The government is doing a lot of work at Jeffersonville, Ind., and there are some contracts in sight at a distance. Locally the demand for the year is not so promising.

In commenting on the long period of bad weather in Louisville, Ky., a prominent brick manufacturer stated that it was by far the worst winter that he had ever seen, and that when a double team couldn't pull 500 brick it was time to call a halt. A number of concerns practically withdrew and made no attempt to deliver, as for several weeks the streets were covered with ice and heavy snow, while all teams were in demand for delivering coal to relieve suffering. For a time it was feared that severe flood damage would be done by the melting snow, but no damage was done at Louisville by high water, and very little to brick plants at any point.

A. P. McDonald, sales manager of the P. Bannon Pipe Co., Louisville, Ky., is back at the office after being laid up for two months with a severe attack of bronchitis, and is just getting things lined up again. Mr. McDonald stated that orders are now coming in from many retail dealers in building supplies for brick, sewer pipe and other clay products for spring stocking. The company's sewer pipe plant has been closed down for the better part of two months on account of bad weather, but is now running full time as is also the other local plant. The company is working on several government propositions and has hopes of landing some of this business.

Conditions have shown remarkable improvement in the Louisville, Ky., section within the past two weeks as a result of fairly good weather, and removal of all snow and ice. Some fair jobs are now in sight, and several of the architects are working on plans for additions to plants, altho there is very little fine residence or city work in sight, and not nearly enough in sight just now to keep the trade busy. As a whole the demand is largely for common or medium priced face brick, there being practically no demand for high grade face brick. However, the members of the local trade are optimistic, and are looking forward with expectation of landing enough government work to aid materially in keeping their plants running.

Among the principal jobs now under way or in sight in Louisville, Ky., are the new warehouse of the Standard Sanitary Mfg. Co., to be of brick construction, and covering a plot of ground 315x160 feet; an addition to the Louisville Cotton Mills plant, to take about 300,000 brick; and one to the plant of the Louisville Milling Co., taking about 300,000. The Standard Sanitary plans are by Capt. Brinton B. Davis, and inquiries have been sent out for prices on brick. Meyer & Brenner have the plans for the cotton mills addition. The Alfred Struck Co. has the general contract on the Louisville Milling Co., but has sublet the brick work to Lutz & Schmidt, brick contractors, who have placed an order with the Tyler Biulding Supply Co., Louisville, Ky., for the necessary brick.

The Court of Appeals recently reversed the Jefferson County Circuit Court of Kentucky in a verdict in which the county court gave peremptory instructions in favor of M. W. Moorman, a fireman who was injured at the plant of the Bannon Pipe Co., Louisville, Ky., some months ago. The Court of Appeals in finding for the Bannon company, and reversing the lower court, found that the plaintiff in the action was guilty of contributory negligence and peremptory instructions should have been given for the defendant. Moorman received $2,400 for personal injuries in the judgment, which was appealed. The evidence showed that hot water had been escaping from the boiler, and that he went to the top of the boiler to open a steam valve, and in descending stepped into the water which he knew was there, thereby receiving severe burns.

The building associations, which have always been of vast benefit to the brick, lumber and general building supply concerns, contractors, builders, etc., have received a severe setback in Louisville, Ky., as the result of the recent disappearance of George L. Martin, secretary of the German Savings Fund and Building Association, who it developed was more than $200,000 short in his accounts. No trace of Martin has been found, and the company has been forced into bankruptcy. A number of borrowers will lose heavily, as Martin fleeced everyone in sight. However, a bill has been introduced into the legislature, which provides for state examination of such companies. If this bill is enacted into law the building associations in the future will be examined in much the same way as are the banks and trust companies, and this may result in the public regaining its lost confidence.

Maine

The Brooks Brick Co., which operates four yards at Brewer, Me., turned out four million brick during the last year and expects to increase its output this year. Much of last year's production was sold in the immediate vicinity, being used in the erection of buildings for the Eastern Manufacturing Co. at South Brewer and Lincoln, the Howland Pulp & Paper Co. at Howland, and the Aroostook Pulp Co. at Van Buren, Me.

Horace Purinton, a Waterville, Me., brick manufacturer,

Union Steel
CHAINS

illustrate the term: "Satisfaction in small things." Their durability and long life is evidenced by the continuous stream of repeat orders; think that over and then read this:

"Please send us, to Bellaire, Ohio, the following steel chain, same as that you have supplied us at Moundsville in the past, viz.:

"100 ft. No. 22-B with 18-inch and 24-inch Sprockets (one each), bored for $2\frac{7}{16}$-inch shaft, which is the same as used here, and which we wish to make standard for both plants hereafter.

"We are equipped with two chains that will be still in use, but as soon as they are ready for replacement will want them replaced by yourselves."—SUBURBAN BRICK COMPANY, B. F. Hodgman, President.

The Union Chain & Mfg. Co.
Seville, Ohio
Makers of Union Steel Chains and Union Standard Sprockets

Don't Let Another Day Go By

without writing for information about the Beighlee Pyrometer.

Under present conditions it is your grim necessity to actually produce more ware—quicker and cheaper.

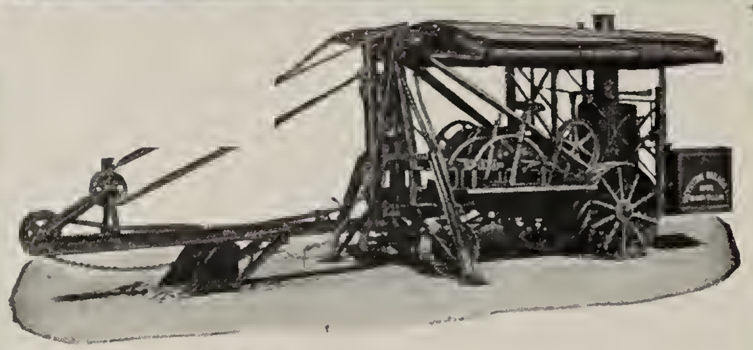
The Beighlee furnishes a way out, provides you with a means to reduce your fuel consumption, burn in a shorter time, and produce a superior grade of ware.

Better ware— at a lower cost. It can be done. Ask how.

Beighlee Electric Co.
Cleveland, Ohio

Herman A. Holz, Hudson Terminal Bldg., New York, Representative in New England States.

KEYSTONE



**Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

No. 5 Drymore Truck

The loaded pallet is picked up from and deposited upon the ground or floor.

No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.

Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—
FOR LESS
The Drymore System **Galion, O.**

appeared before Governor Millikin and his council at Augusta, Me., recently to press a claim for $228 due on a contract for brick furnished for the state reformatory for women at Skowhegan. The contractor went into bankruptcy without settling with the sub-contractors, of whom Purinton was one, and the latter have been unable to collect the amounts due, as the state already had a claim against Wilbur for unsatisfactory work on an old contract at the state hospital at Augusta. The governor and council took Purinton's claim under advisement.

Maine brick manufacturers see in the rebuilding of Halifax, and the resultant demand for building materials, prospects of a busy season as soon as spring permits the reopening of the brick yards. Maine is right on the line of the railroad leading to Halifax and is the logical market from which to supply the needs of the builders. Like other fire stricken cities, Halifax probably will rise out of the ruins a more substantial city. Brick buildings will replace wooden structures to a large measure, especially in the business districts, and the Maine manufacturers are getting ready to meet the demand for their product, which they feel sure will come as soon as warmer weather makes building possible.

Massachusetts

A brief respite from the cold weather early in February proved a very material help to brick manufacturers in Massachusetts, in speeding up deliveries, and prospects are that the final reckoning will show better business conditions in February as a whole than was the case a year ago. A number of the larger companies are still making deliveries on government contracts and the prospects are that the market will be pretty well cleaned up before the yards begin operations in the spring, which should mean, manufacturers declare, a big season. The question of labor conditions, however, is one that cannot be foretold, but the brick men are characteristically optimistic and are preparing for a good season.

Missouri

The John Hill Construction Co. of St. Louis, Mo., has been awarded the contract for the brick work on the new Y. M. C. A. annex which is to be erected on Sullivan and Grand avenues in St. Louis. The Hill company was given the contract at $150,000. This structure is to be one of the largest and most modern of its kind in the Middle West. Its erection, right at this time, was chiefly due to the pressing need for additional Y. M. C. A. room, brought on by the movement of troops thru St. Louis and their entertainment here.

New Jersey

The Woodbridge (N. J.) Ceramic Corporation is a new concern which will deal in fire brick. Its capital is $30,000 and the incorporators are: N. Peter Jensen, Peter P. Svhendorf and Wm. H. Prallma, all of Woodbridge.

Winter has worked havoc with some of the brick plants at Hackensack, N. J., and much repairing will be necessary before operations can be carried on in anything like the usual volume, the snow having crushed a number of the sheds in the district and the wind helping to complete the devastation.

C. E. Watrous has resigned as secretary of the Monmouth Manufacturers' Association, a clay products manufacturers' organization, embracing manufacturers in Middlesex and Monmouth counties, New Jersey. He was connected with the Munning Loeb Co., of Matawan. Friends report he may enter government service in the South. It is likely that a successor in the clay association will be chosen at the next meeting, March 6. Weather conditions prevented a February session.

Alpheus Krantz has incorporated the North New Jersey Wire Cut Brick Co. at Kingsland, N. J., for $100,000. The new plant at Kingsland is now ready for operation, and Mr. Krantz expects to do a large and profitable business this season. This was formerly the Kingsland Brick Co. and Mr. Krantz was its selling agent, but when the Canadian Car & Foundry Co.'s plant was blown up more than a year ago, the company went out of business. Mr. Krantz took over the plant and rebuilt it. It is now one of the best and most modernly equipped plants in the vicinity. The plant is well located, being near the centers where much building is contemplated, and has the advantage of being able to deliver by motor truck if the shipping congestion is not relieved.

The housing committee appointed by the Chamber of Commerce of Paterson, N. J., to secure data regarding the best methods for solving the housing problem, have held numerous meetings during the past two weeks, but thus far have evolved no tangible program. Nathan H. Sloan, of Paterson, is the only brick man on the committee. A sub-committee is securing data from other cities which have undertaken the development of such operations, and the committee hopes within a week or two to present a definite and practical plan to the Chamber of Commerce for development. Paterson is greatly in need of better housing conditions and the fact that so many live men are included in the committee's membership is ample justification for the belief that the city will be favored with a program and development worth while in the very near future.

New Mexico

At the annual meeting of the New Mexico Fire Brick Co., of Gallup, New Mexico, recently, T. B. Catron, of Santa Fe, was re-elected president, George Page was elected vice-president, T. F. Smaling was elected treasurer, and Frank Lavan secretary. W. T. Christian remains as manager of the plant. The company decided to add new machinery and kilns so as to increase its capacity, and this work will begin in the near future. At the present time the company is supplying a large number of fire brick for the use of the government.

New York

Building permits in Binghamton, N. Y., for January show a falling off as compared to the same month last year. The value of the permits issued was $2,726 compared with $145,693 a year ago.

The coal situation in the East is still serious, but is rapidly being remedied. Some brick plants in Central New York were running on a day to day supply at the height of the famine but they are now able to lay in a week's supply ahead.

Building material dealers thruout New York state, altho they did not suffer to any great extent because of the Garfield order, are glad it has been lifted and its good effects, they say, are already being felt in the increased number of cars that are coming in from all points.

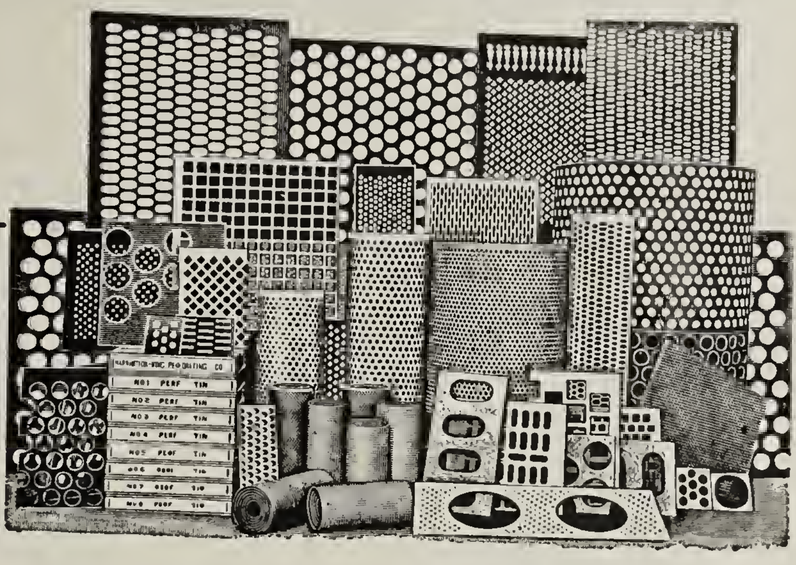
New York brick manufacturers are generally optimistic regarding conditions. They look for an increase in building this spring and orders already booked would seem to verify

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand,
Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity,
Durability and Satisfaction

The Harrington & King Perforating Co.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.



You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated
Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher
Chemical Company
100 William St. New York

Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
Cleveland, O. San Francisco, Cal. New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

ANTAGONISTS

ROLLIN'S
BARIUM
CARBONATE

vs SCUM

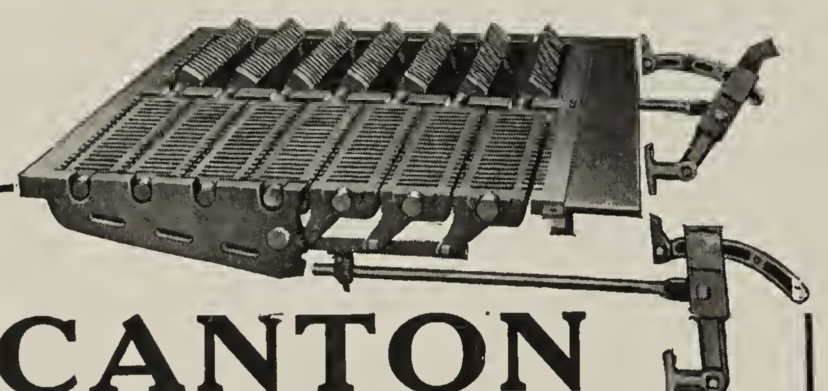
and Rollin's always
Wins.

Add it to your clay at the pug mill, or the dry pan, it makes the scum producing salts insoluble and harmless to your ware.

Ask for information.

The Rollin Chemical Company
(Incorporated)
Charleston, West Virginia

The National Aniline and Chemical Co.,
of 244 Madison Ave., New York
General Sales Agents.



CANTON
Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave., CANTON, OHIO

Southern Representative: McBurney & Jones,
Efficency Engineers, 829 Trust Co. of Ga.
Bldg., Atlanta, Ga.

their expectations. A great many proposed structures have been held up for a year in the hope of lower prices for building materials but the men planning to build have about abandoned this hope and cannot wait longer, as the need for building grows imperative.

Improved weather conditions have had the effect of releasing large numbers of stalled freight cars thruout New York state and within a short time it is expected the movement of cars will be normal. War materials, of course, are having the right of way on all railroad lines but despite this, brick manufacturers are getting their shipments thru even tho it does take a little longer to reach destinations.

The production from the pottery plants in Syracuse, N. Y., which manufacture close to fifty per cent. of the total produced in the country, has been cut down one-sixth by the Garfield holidays, according to reports from managers and superintendents of the leading plants. The shutdown comes at a time when the pottery manufacturers here are swamped with orders, and when every minute the plant was in operation counted enormously. Order after order has been turned down by local firms, because of their inability to fill them. They have increased the capacity of their plants, but the increased orders have more than offset the increased capacity.

In Syracuse, N. Y., this spring there will be a large number of brick houses constructed, as well as a number of two-family dwellings. The need for them is very great. There has been a house shortage for two years and the situation this spring is as bad as ever. Owing to the scarcity of dwelling houses, landlords have raised rents again so that flats and apartments are now costing from twenty to twenty-five per cent. more than they did two or three years ago. The construction of the mammoth Schopfer apartment, finished this spring, will help some, but when compared with the total need, will be only a drop in the bucket. Similar conditions are reported from Albany, Rochester, Oswego, Auburn and other cities thruout the state.

Housing conditions in a number of New York cities are very serious. Buffalo is in the grip of a house famine. With a large number of war munition plants there, it has been almost impossible to find suitable dwellings for the men who have been called to that city to work. Cases have come to light where mechanics and other skilled workmen have been brought to Buffalo and given good positions. The men, however, were not able to get rooms or lodging except within three, four or five miles from the factories and this, coupled with the recent poor street car service in that city, caused many of them to quit and go back to their home cities and towns at their old jobs. Buffalo city officials have taken the matter in hand and are considering ways and means of getting housing accommodations for the thousands of men who have flocked to that city.

Ohio

Fire of unknown origin destroyed a large one-story building used by the Cooper Brick Co., Akron, Ohio, February 13. The loss is estimated to be near the $20,000 mark.

The Slag Tile Brick & Block Co. has been incorporated at East Youngstown, Ohio, for $15,000, by Theo. Smith, Victor Geiser and Paul Smith.

Papers have been filed with the secretary of state increasing the authorized capital of the Ironton (Ohio) Fire Brick Co. from $20,000 to $40,000.

The Slag Tile Brick & Block Co., of East Youngstown, Ohio, has been incorporated with a capital of $15,000 to manufacture brick and tile. The incorporators are Theodore Smith, Victor Geiser, Paul Smith, Ludwig Bayer, M. Zarich and Steven Sologoza.

The Cincinnati (Ohio) Courthouse Building Commission has awarded the contract for tile floors in the library and court rooms in the new court house, in process of construction, to the Beaver Tile & Specialty Co., New York, at $18,166. The work is to be done at once.

The board of control of the city of Cleveland, Ohio, has rejected bids of several local contractors for $450,000 paving in different parts of that city. It is claimed the bids were 30 to 60 per cent. higher than the estimate of the city engineer. Bids will be readvertised.

That improvement in weather condition will have a significant effect upon the brick and clay products industry in the matter of building operations in Cleveland, Ohio, was demonstrated last week with the temporary arrival of spring weather. All firms in the Sixth City experienced an increase in orders, and certain jobs were rushed.

Damage estimated at $25,000 was caused by fire on February 8, which destroyed six kilns of the Kenilworth Tile Co., East Liverpool, Ohio. This is the second destructive fire to visit East Liverpool during the week, the plant of the Adamant Porcelain Co. having been burned to the ground on February 7. The loss is estimated at $100,000. Origin of the blaze is undetermined. David Maux, night-watchman of the Adamant plant, is missing, and is believed to have been burned to death. The company was working on war orders.

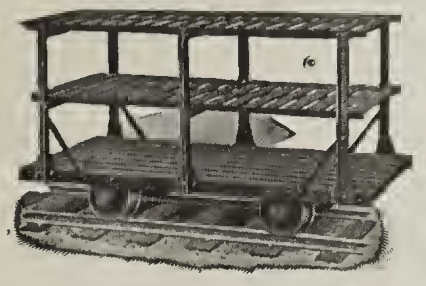
Emmet Howard, of the Columbus (Ohio) Fire Brick Co., has now opened offices in the Hartman Building. He is agent for eight different factories making fire brick, common brick and other clay products. He reports considerable activity in brick circles, taking present building and transportation conditions into consideration.

The Ohio Paving Brick Manufacturers' Association will meet in Columbus, Ohio, in the near future, the exact date not yet being fixed. According to James R. Marker, commissioner, the meeting will be for the purpose of discussing unusual conditions in the business incidental to the war.

An important opening of bids by the Ohio Highway Commission will take place in Columbus, February 28. In the list of bids called for are quite a few stretches of brick paving. They are: In Ashland county, two one-half-mile sections, and 4.08 miles; Columbiana county, one mile; Madison county, two miles; Muskingum county, 2.93 miles, 6.15 miles and 4.55 miles.

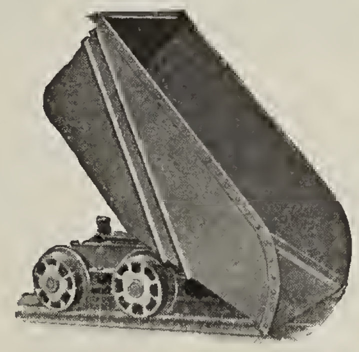
Declaring its purpose and willingness to assist the state legislature to enact a satisfactory building code and announcing its intention to become affiliated with the national organization, the Ohio State Association of Architects held its annual convention at Dayton recently. The following officers were elected for the ensuing year: President, Harry L. Scheneck, Dayton; vice-president, C. W. Hopkinson, Cleveland; secretary and treasurer, Charles H. Grubb, Columbus. Next place of meeting will be selected by the executive committee.

W. T. Matthews, sales manager for the Claycraft Brick Co., Columbus, Ohio, has just returned from a week's trip in Washington, Baltimore and New York. He went principally to see traffic officials of railroads relative to a better car supply. One of the results of the trip is a better car supply at several of the company's plants and Mr. Matthews feels very much encouraged over the out-



KARS

"Just a little bit different." Made a little bit better—Just-like-you-want-them.



We have devoted our whole plant for the building of cars, knowing that our specializing on this one product would mean better service to you. Write today for information and catalogues.

THE WATT MINING CAR WHEEL CO.

BARNESVILLE, OHIO

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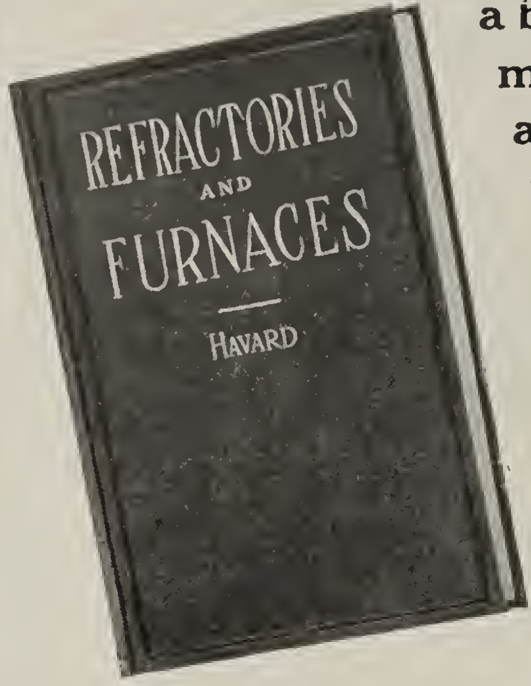

To the man who wants to know —who must know — who is determined that *he will know more* about the manufacture and use of refractories

WE OFFER THIS BOOK

Havard's

Refractories and Furnaces

To briefly outline its contents—It clearly describes and illustrates the preparation of silicious refractories, refractory clays, and basic and neutral refractories.

It describes the **kind of refractories used,** and their application in the manufacture and metallurgy of iron, steel, copper, lead and silver.

It tells about the refractories used in Chemical and Electro-Metallurgical industries. And then it describes the manufacture of refractory hollow ware, heat measurement, mining, and finally the making and burning of common clay brick.

We do not believe that a more valuable book could be purchased, and we are enthused over this idea—it should be in every single clay products plant in the United States, whether you manufacture refractories or non-refractories, you cannot afford to be without it.

Send $4.00 to

BRICK & CLAY RECORD
BOOK DEPARTMENT
610 Federal St. Chicago, Ill.

look. He says that he is now receiving quite a few inquiries, mostly for face brick, which shows an awakening in the building game.

Considerable outlet for a new product by the Barkwill-Farr Co., Cleveland, Ohio, has developed in the last few weeks. The Rust Engineering Co., Cleveland, Ohio, has closed contracts for a number of chimneys for munitions plants and buildings for other government work, which are going up in the Northern Ohio district and other parts of the country right now. This firm is using the radial block of the Barkwill-Farr Co. Shipments are being made almost daily to the different jobs. One of the largest shipments this week was to the stack of the DuPont Powder company at Hopewell, Va. Some of the stacks being erected with this material are 225 feet high.

Acting upon a petition filed in Common Pleas Court, Judge J. G. Moore has named W. T. Tebbutt as receiver for the Cartwright Bros. Pottery Co., of East Liverpool, Ohio. The receiver has announced that the plant will be continued in operation. The statement shows, it is said, that the company has assets of about $144,000 and liabilities of about $70,000. The officials of the company contend that on occount of embargoes on freight and fuel coal they have been unable to operate the business to the best advantage, and that this condition has tied up a lot of working capital. The firm is one of the oldest pottery manufacturing corporations in Ohio.

Warden Thomas, of the Ohio Penitentiary and several other state officials in Ohio are making a determined stand to use the idle convicts in the penitentiary for the manufacture of brick. The plant at Junction City, while not being a great success, has aided in keeping prisoners at work and a movement has been started to enlarge the brickmaking industry of the Buckeye state. The plan is to secure a plant, or erect one, where from 300 to 400 convicts will be employed. It is claimed that statistics which have been compiled show that the brickmaking industry will be the most profitable of any that have been suggested for the employment of convicts, but that at least $200,000 would be necessary to erect a plant.

Bricklayers have presented to Columbus contractors the new schedule which they wish to go into effect in April, increasing the wages from 75 to 87½ cents per hour. Some members of the union favored raising the scale to $1 an hour, the same rate as set by the bricklayers at Charleston, W. Va., but the concensus of opinion was that the rate should be 87½ cents. Bricklayers claim that they are entitled to the increase, to help cover the high cost of living and to make up for lost time during the winter, which has been unusually heavy because of the zero weather. Some bricklayers expressed themselves in favor of a five-day week, contending that they did not like to work only a half day on Saturday. The rate under discussion at that time was 80 cents an hour, which with five days of eight hours, would make for the 40 hours, $32 per week. Many bricklayers have been lured into the munitions and steel plants during the past winter at much higher wages and their comrades say there is sure to be a shortage of members of that craft, when the building season opens in the spring.

Pennsylvania

The McGeary Fire Brick Co., Pittsburgh, Pa., has been incorporated by Paul A Stuart, Cheswick, Pa., with a capital of $25,000.

The brick manufacturing concern known as the Clymer (Pa.) Brick and Fire Clay Co. has changed its name to the Hiram Swank's Sons. The main offices of this concern are in Johnstown, Pa., with branches in Philadelphia and Pittsburgh. The same company has plants at Irvona, Clearfield and Johnstown, with a capacity of 50,000,000 fire brick annually.

South Carolina

The Bennettsville (S. C.) Brick Co. has been incorporated with a capital of $25,000 to manufacture brick. L. S. Morrison, Florence, S. C., and J. B. Morrison, Marlboro, are the incorporators.

Tennessee

The Hood Pottery & Clay Products Co., Daisy, Tenn., has filed notice of an increase in its capital from $50,000 to $100,000 to provide for expansion.

The Chemical Clay Products Co., Daisy, Tenn., has recently been organized to operate a local plant. L. E. and B. M. Hood, and G. W. Thompson, are the heads.

Texas

The Elgin (Tex.) Brick & Tile Co. has completed its organization plans, and has awarded a contract for the construction of two new buildings, 100 x 700 feet, and 110 x 250 feet, respectively. It is planned to install new machinery immediately upon the completion of the structures, to have a daily capacity of 50,000 press brick and 150 tons of building tile. The old Lasher brick property south of Elgin has been secured. Continuous kiln and producer gas will be used to burn the products. A. L. Adams is president; S. F. Kirksey, vice-president; J. D. Quinn, secretary and A. J. Kautz, manager.

West Virginia

Many of the brick plants in the vicinity of Grafton, W. Va., have changed over to the use of coal as fuel instead of the less certain supply of natural gas. It is understood that the construction of large gas manufacturing plants will be carefully considered in the hopes of substituting artificial for natural gas.

Canada

The Vandorf Brick Co., Toronto, will proceed with the erection of a brick plant near Toronto. Mr. Reinhardt is the interested party.

Mr. Jamieson, of the Walkerville (Ont.) Brick Co., which was recently incorporated, expects to proceed with the erection of a brick and tile plant in the new future.

The plant of the Ontario Brick Co., at Cooksville, Ont., was sold by the liquidator, Walter W. Price, Toronto, on January 22, to F. W. Polfield, of Montreal. The price paid was $250,000.

* * *

Heavy Loss in Pottery Production

Conservative estimate has been made in the East Liverpool, Ohio, pottery district that the loss of kilns, due to the scarcity of gas, has created a loss of between $1,000,000 and $2,000,000 in finished pottery products. This volume cannot be made up, even if the pottery plants were to operate to full capacity thruout the balance of the year.

Erie Revolving Shovels

"Very stiff clay, 750 cu. yds. a day"

"We have averaged 750 cu. yds. of very stiff clay per ten-hour day, with conditions not any too favorable. Our Erie Shovel can easily load two yards in a minute if loading conditions are right.

"We prefer the Erie to any other shovel we have ever used. In our opinion the Erie has everything else of her size beat a mile."—McCrady Bros., Braddock, Pennsylvania.

The speed of the Erie Shovel can save you money. This 20-ton shovel does work that would otherwise require a larger and far more costly machine. You get the capacity that you require, with less money tied up in equipment.

Besides, the Erie is the RELIABLE shovel. Built far stronger than the usual standard, through and through. Stronger truck frame, stronger boom, stronger dipper-handle, larger bearings. More metal and better metal at every point of wear and strain. The Erie often digs hard shale or stiff clay without shooting.

Prove these facts for yourself. Find out which is the best revolving shovel on the market.

We would like to send you a copy of our Bulletin "B." You will find it interesting. Write for a copy.

Ball Engine Co., Erie, Pa.

THWING

HIGH RESISTANCE MULTIPLE RECORD

PYROMETERS

EXERT A STRONG MORAL INFLUENCE UPON WORKMEN

Men are most efficient when tab is kept on their actions in a way that keeps them watchful and furnishes proof of vigilance.

The automatically written temperature record settles many a dispute with indisputable evidence. An unscrupulous man checked by a record **which he cannot alter,** will not sneak away, or offer flimsy excuses. That night furnace men especially, **do** absent themselves from duty is constantly being proven in unprotected plants, where men are found asleep or not at all. These are the men who resent the suggestion of pyrometers—and sometimes quit when the installation is made.

Loyal conscientious men on the other hand, welcome a reliable pyrometer as a means of proving the worth of their work, and of exonerating themselves if a question is raised. With such men, a pyrometer inspires confidence and enables them to make records they are proud of.

The pyrometer as a guide to and check on inexperienced men, is also a splendid aid where there is a shortage of skilled labor or the regular attendants are suddenly taken away. Many users merely show a man how to fire and ask him to watch the pyrometer. The man soon develops a preference for watching the pyrometer rather than the heat.

Workmen, if allowed access to the records, instinctively strive for the best results from day to day, and in watching the operation of their own unit, are always found studying the records of the other workmen.

The success of Thwing Instruments, aside from their high scientific development and accuracy, lies in their ability to withstand rough treatment and do good work in the hands of ordinary mechanics, rather than requiring care by technical experts.

Tell us your conditions and let us explain the economies as they apply directly to **your** plant.

Thwing Instrument Co.

3336 Lancaster Ave., Philadelphia, Pa.

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Just what effect the new ruling of the railroads will have upon the receipt of raw materials to all potteries in the country, is a problem. Heretofore requisition for cars has always been made by the shipper. The new ruling has reversed conditions, and the buyer of materials has to obtain an order for the placing of a car. The consignee must show the urgency of his request for material, and his ability to unload promptly. The road and terminal facilities must be taken into consideration at the same time. The change is so unusual and unlooked for, that more or less confusion is bound to result.

It is possible that the production of the Clay Casting Co., at New Cumberland, W. Va., will be changed from cast cereal sets to that of hotel china. Officials of that concern have been working out details with this end in view, and as little machinery will have to be installed to make this change, operations on the new line can be started quickly. C. L. Gray is the general manager of this concern.

The pottery industry at Trenton, N. J., has felt the effects of recent orders issued by the fuel administration. Production up to the present time has been normal with a fair demand in the trade. The Greenwood China Co., Canal Street, has filed plans for the construction of new additions to cost about $12,000. The company specializes in the production of vitrified china.

The Trenton (N. J.) School of Industrial Arts is planning for the immediate construction of a new kiln, about 20 x 40 feet to be used for pottery work in connection with the proposed new shop building to be erected on Quarry Alley at a cost of approximately $30,000. Plans have been prepared for the structure by J. Osborne Hunt, Trenton. Dr. Frank Forrest Frederick is director of the school.

The Bedford (Ohio) China Co., is making rapid progress in the erection of its new plant, and the works are now nearing completion. To provide utmost efficiency the company is using the resources of the ceramic department of the United States Bureau of Standards. The plant will consist of two continuous kilns, with auxiliary clay shops and pottery departments.

The Southern Potteries Co., Erwin, Tenn., has completed plans for the erection of a new seven-kiln unit. With the present situation it has been deemed advisable to hold up actual construction, but it is planned to proceed with the erection at an early date. The present works are operating at capacity.

The Acme Sanitary Pottery Co., May Street, Trenton, N. J., manufacturers of sanitary earthenware, has acquired the plant of the Trenton Welding & Cutting Works, at May Street and Kirkbride Avenue, adjoining its works, and will use the property for expansion.

The Virginian Potteries Co., Huntington, W. Va., has commenced the grading of a site to provide for the erection of the first unit of its new plant, which will be about 160 by 500 feet.

The American Cameo Company, Newark, N. J., has been incorporated with a capital of $100,000 to engage in the manufacture of china ware. J. C. Trumbull, Louis A. Bergh, and J. E. McIntyre, all of Brooklyn, N. Y., are the incorporators.

The China Products Co., Huntington, W. Va., has been incorporated with a capital of $50,000 to manufacture vitrified china and kindred specialties. The incorporators, all of Zanesville, Ohio, are: C. M. Ludman, C. W. Tanner, and C. T. Marshall.

* * *

AMERICAN CERAMIC SOCIETY SHOWS TREMENDOUS PROGRESS

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Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

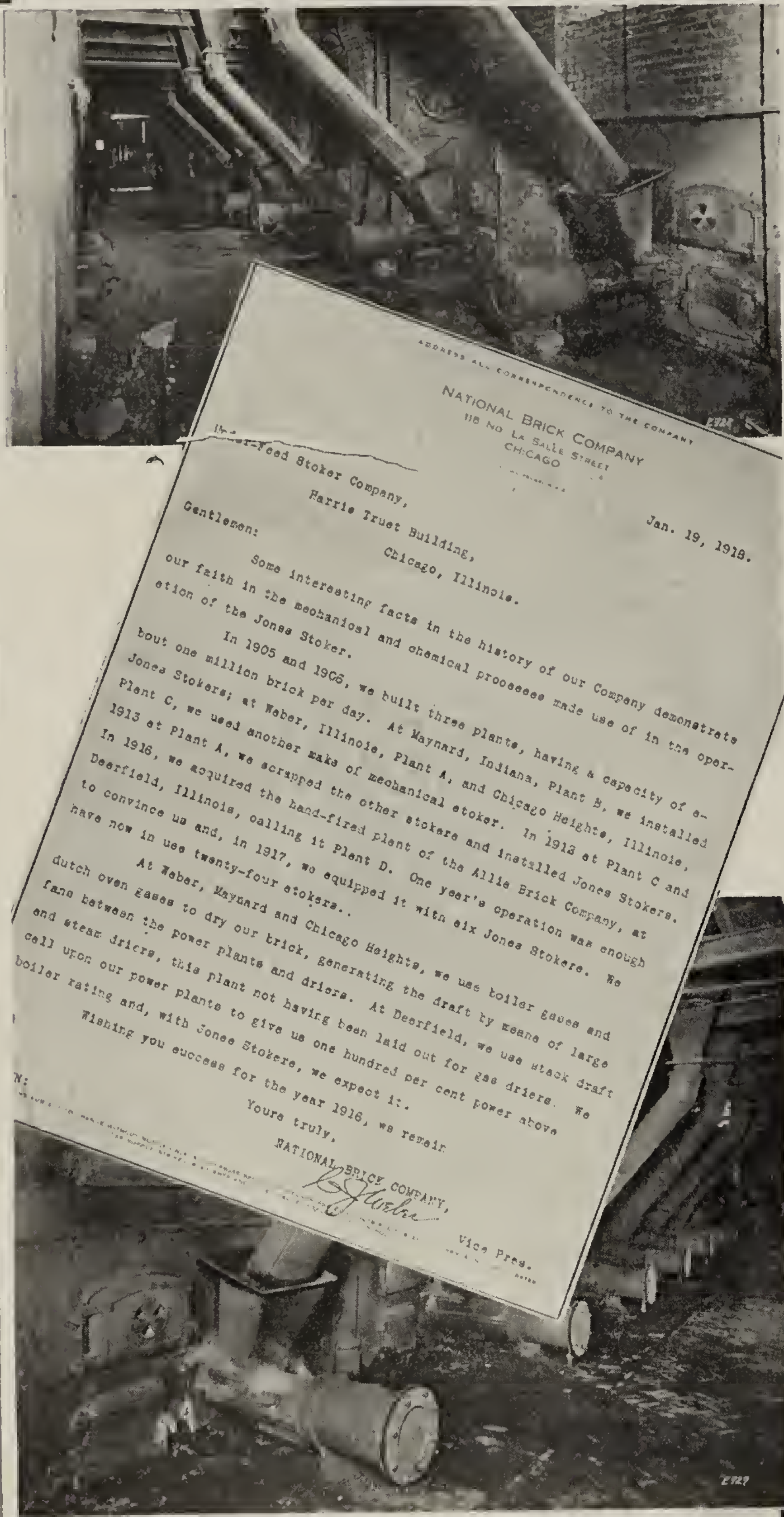
For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

JONES STOKERS save coal and money for the National Brick Company on TWO PLANTS. The photos show the installations. Read the letter, it explains the situation.

National Brick Co., Chicago Heights, Ill.



ADDRESS ALL CORRESPONDENCE TO THE COMPANY
NATIONAL BRICK COMPANY
118 NO LA SALLE STREET
CHICAGO

Jan. 19, 1918.

Underfeed Stoker Company,
Harris Trust Building,
Chicago, Illinois.

Gentlemen:

Some interesting facts in the history of our Company demonstrate our faith in the mechanical and chemical processes made use of in the operation of the Jones Stoker.

In 1905 and 1906, we built three plants, having a capacity of about one million brick per day. At Maynard, Indiana, Plant B, we installed Jones Stokers; at Weber, Illinois, Plant A, and Chicago Heights, Illinois, Plant C, we used another make of mechanical stoker. In 1912 at Plant C and 1913 at Plant A, we scrapped the other stokers and installed Jones Stokers. In 1916, we acquired the hand-fired plant of the Allis Brick Company, at Deerfield, Illinois, calling it Plant D. One year's operation was enough to convince us and, in 1917, we equipped it with six Jones Stokers. We have now in use twenty-four stokers.

At Weber, Maynard and Chicago Heights, we use boiler gases and dutch oven gases to dry our brick, generating the draft by means of large fans between the power plants and driers. At Deerfield, we use stack draft and steam driers, this plant not having been laid out for gas driers. We call upon our power plants to give us one hundred per cent power above boiler rating and, with Jones Stokers, we expect it.

Wishing you success for the year 1918, we remain

Yours truly,

NATIONAL BRICK COMPANY,

Vice Pres.

National Brick Co., Maynard, Ind.

Send for Booklet No. 51. It confines its story to the Use of Stokers on Clay Plants.

The Underfeed Stoker Co. of America, Chicago, Illinois

Branch Offices in the Following Cities:

New York, Pittsburgh, Philadelphia, Buffalo, Cincinnati, Toronto, Boston, Kansas City, Denver, Detroit, Minneapolis, Salt Lake City, Charlotte, New Orleans, Toledo

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MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

Building The Lincoln Highway Right

Bucyrus and the American Clay Machinery Co. have been interested in the Lincoln Highway ever since the scheme was launched several years ago. From the start they considered it a splendid road improvement plan and the development has proven the wisdom of the promoters.

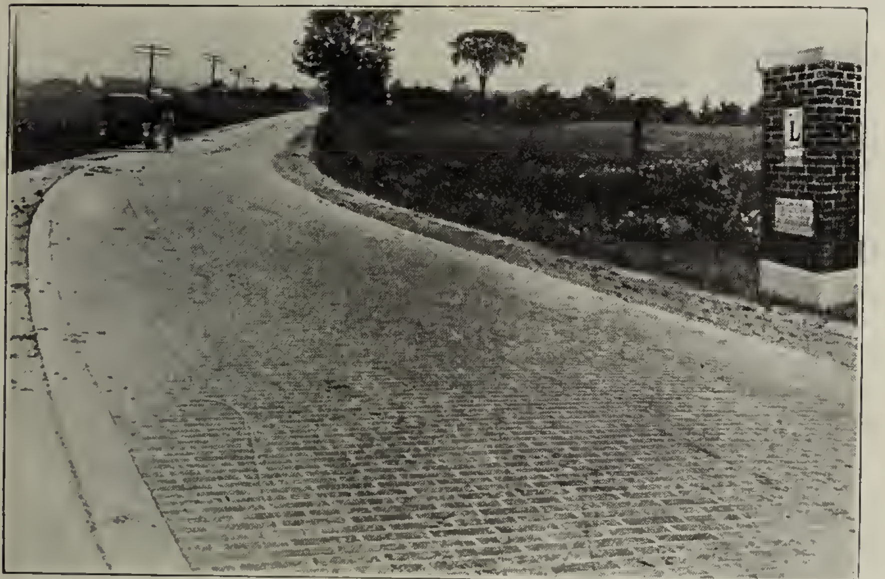
The American company at once started on a campaign to see that brick was used in the improvement of the Lincoln Highway wherever their influence was sufficient to have brick adopted. All improvements in their vicinity have been made of brick and it is only a question of a short time when the twenty miles thru this county are of brick and the influence of good brick will extend beyond the borders of the county.

Having established brick as the standard road in improving the Lincoln Highway, the American company was on the lookout for something which would more closely tie the project to clay products, as a consequence they have originated and had adopted the brick highway marker shown in the accompanying cut.

Heretofore the Lincoln Highway had been marked by painting the emblem of the highway on the telephone poles along the way, but that means repainting every year or so and is a temporary and unattractive marking at best.

The American brick marker is laid up with rough face brick and in the center of the side facing the road is embedded the Lincoln Highway emblem done in terra cotta with the red and blue bands of the emblem burned under glaze. This makes the marker a permanent piece of masonry which will last, as bright as new, so long as the roadway endures.

The American marker is five feet high above the foundation and rests on a six-inch base and is capped by a four-inch capstone. The whole is set on a three-foot foundation. The brick column is two feet nine inches wide to the road and two feet deep. The brick are laid with five-eights joint, some of the joints being struck and some stripped to ascertain which effect will be the better.



Section of Brick-Paved Lincoln Highway, Showing the Brick Marker

Make the Dirt "Pay Dirt"

with

A Buckeye

Clay Digger

"Pay Dirt" on the clay plant is dirt that is chopped up fine at the pit, it is perfectly mixed, it is dug at a low cost per ton—and on some classes of plants that can only mean one thing—(if it is to be accomplished) the use of the Buckeye Traction Digging Machine.

On many clay plants it is already in use and is doing good work everywhere installed. It may fit your conditions, and if so you can determine accurately with our catalog. Send for it.

The Buckeye Traction Ditcher Company
Findlay, Ohio

The "B-G" Portable Belt Conveyor
Eliminates Your Worst Labor Problem

With this light, practical conveyor you can reduce your handling charges at many points. The conveyor can be moved easily on its own trucks or on an overhead track, in a shed or in the open.

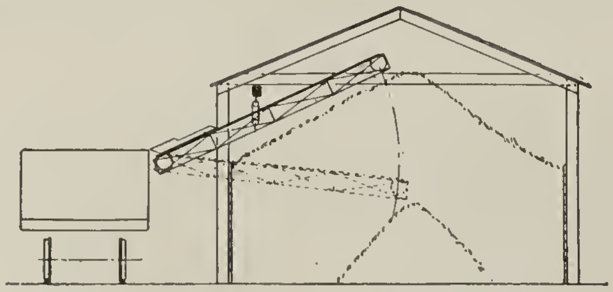
It handles **coal, clay** and **brick.** It will operate level or on an incline. It eliminates the wheel barrow and all rehandling and thereby **cuts the labor costs in two.**

Driven by electric motor within the frame. Eighteen-inch belt. Made in 12, 15, 20 and 25 foot standard lengths or in special lengths to suit conditions.

In writing for price, state length of conveyor required and voltage, phase, and cycle of your current.

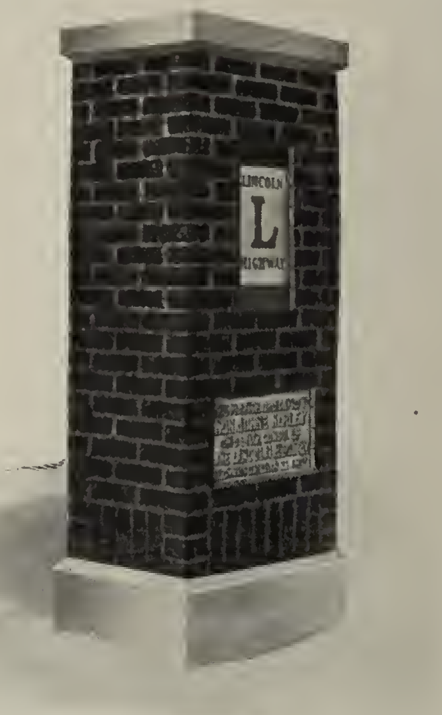
Barber-Greene Company
Aurora, Illinois

532 Acklin Ave., Toledo, Ohio.
Maurice J. Watson Co., Newtonville, Mass.
Lucke Sales & Engineering Co., Minneapolis, Minn.
Machinery Rental & Sales Co., Kansas City, Mo.
Mussens Limited. Montreal, Canada.



For inside use in any type of shed piling coal or reclaiming clay.

In designing this marker the American company was assisted by the Northwestern Terra Cotta Co., Clybourne Avenue, Chicago. The Northwestern people were mighty helpful and took an active interest in the matter. The terra cotta panels made by the Northwestern company were very satisfactory and show splendid workmanship. They are in keeping with and a credit to both the marker and the brick paved Lincoln Highway as well as to the Northwestern company.



Close-Up View of the Attractive Lincoln Highway Marker

It is the intention to build these markers one mile apart thru the county and the idea is offered to the country at large for use along the Lincoln Highway. The American company will be pleased to furnish information to those interested and would suggest that brickmakers along the Lincoln Highway stir up interest in this most excellent standard of brick construction.

The markers as built at Bucyrus have received no end of favorable comment and can be made the standard marker along the Lincoln Highway from coast to coast if properly promoted by the clay trade.

* * *

Lakewood Acquires Galion Truck

Announcement was made recently that the Lakewood Engineering Company of Cleveland, Ohio, had purchased the Galion Dynamic Motor Truck Company.

Wm. Waring, who represented the old company in the Philadelphia territory, has joined the Lakewood organization and will continue to serve the trade in connection with factory and warehouse freight handling problems.

* * *

Marion Machine Expands

The Marion (Ind.) Machine Foundry & Supply Co. has taken over the entire business, good will, patterns, patents and drawings of the Planet Steam Specialty Co., who have specialized in the past on the manufacture of soot blowers for all types of water tube boilers.

The inventor and secretary of the Planet company, Gordan C. Bennett, has also joined the Marion organization and will take charge of the engineering department to develop the manufacture of a complete line of water tube soot blowers for all types of boilers.

* * *

"What The Erie Is Doing"

It is the title of a bulletin shown in an accompanying illustration and issued by the Ball Engine Co., of Erie, Pa., makers of the Erie steam shovel.

There are fifty-three photographs where the Erie is

An Interesting Booklet

shown doing all the kinds of work that a steam shovel is required to do, and some that is rarely attempted by a power shovel unless it be extremely large and heavy.

Under each photograph is given definite information and data regarding that particular shovel, and in some cases signed letters are used showing what success owners and operators have had with the Erie.

Actual performance records are thus available to the man who wants to know what the shovel will do under all probable and possible conditions.

* * *

Hauling Clay Thru The Air

It often happens that the location of the clay supply is at such a point, that it is either inconvenient or impossible to build the factory at the source of raw clay. Usually it is necessary to build the plant near the railroad or in close proximity.

When such topographical conditions exist as to make it difficult or too expensive to transport the clay material to the plant, the new way is "to haul it thru the air."

Many plants have adopted an installation of aerial trams and in quite a few cases it has been found to be actually cheaper and more satisfactory than surface haulage. This condition is particularly apparent where a Broderick & Bascom aerial wire rope tramway has been installed.

The tramway carries the clay over hills, over rivers

Bucket Arriving With a Load of Clay

"WE'RE replacing leather and rubber belting with the *Gandy* kind every day.

"Why?—the original stitched cotton duck Power, Thresher, and Conveyor Belts cost a whole lot less than the leather and rubber kind, and do the work equally well.

"Then, too, the belt user has come to know the dependability of *Gandy* service—'on-the-Job' expresses it exactly.

"*Gandy* agents, carrying complete *Gandy* stocks, are located at all main jobbing points, making it possible for your supply house to give you quick action on your belting wants.

"Here at the factory we carry every width and ply, ranging from as light and narrow as 1 inch, 4 ply, to as wide and heavy as 30 inch, 10 ply.

"Whenever there's any doubt in your mind about the width and ply of *Gandy* you ought to use, put it up to us—our engineering department is employed to serve you."

Genuine *Gandy* stitched cotton duck belts can always be told by the painted green edge and well-known *Gandy* trademark.

Write for samples and prices

The Gandy Belting Co.
732 West Pratt Street
Baltimore, Md.
New York Branch, 36 Warren Street

SAY "I SAW IT IN" BRICK AND CLAY RECORD

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

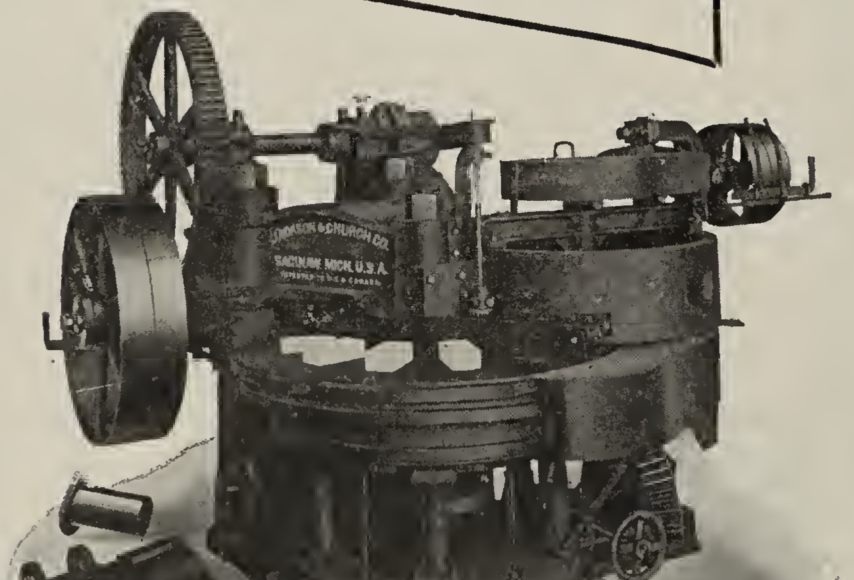
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

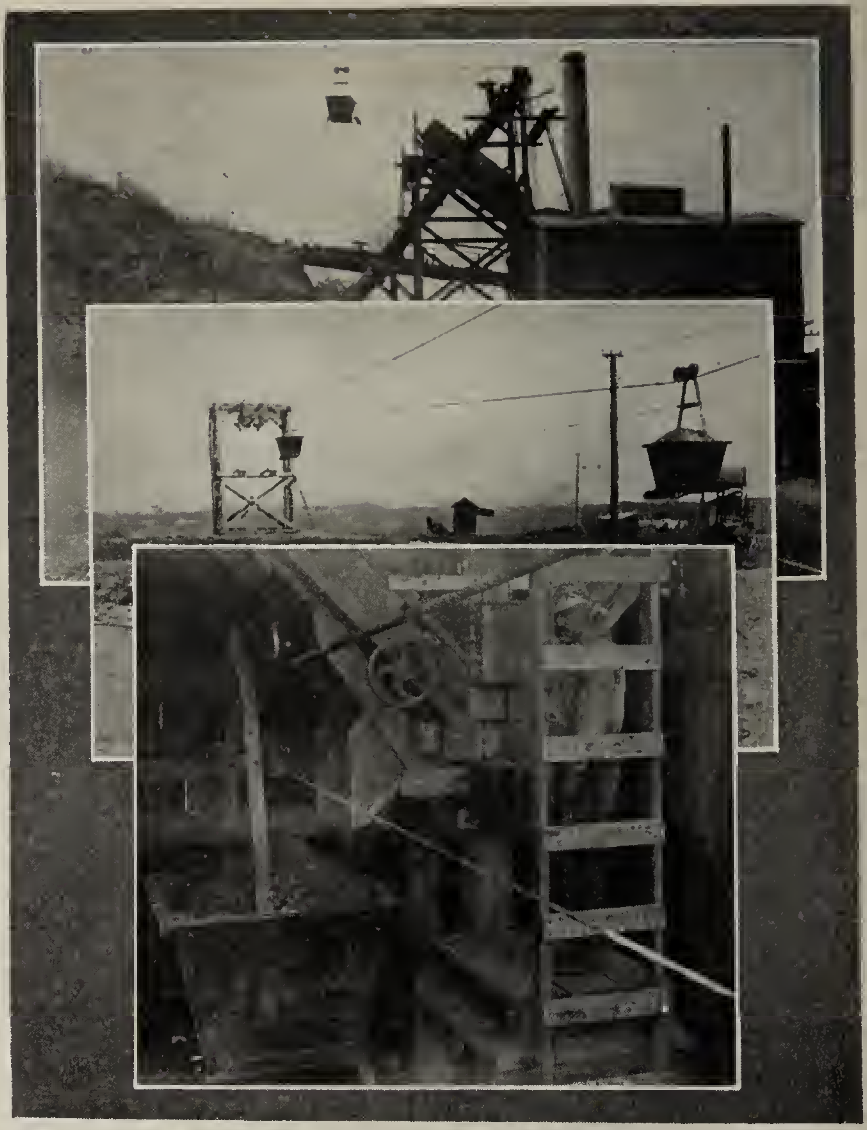
WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press



The Bucket At Various Stages of the Journey

and ravines, over roads and railroads—all without the building of expensive road beds or bridges, and no industrial equipment is required.

The system even opens up for commercial exploitation rich beds of Kaolin or clays heretofore considered inaccessible, without the expenditure of a large sum of money.

Down at Continental, Mo., is the clay plant of the Continental Brick Co. There one of these aerial systems is in use, built by the Broderick & Bascom Rope Co., of St. Louis, Mo.

Here the clay bed is located 1,850 feet from the clay shed, and, directly in between plant and pit, squats a quarry pit, 300 feet wide and 85 feet deep.

This almost insurmountable difficulty became in reality a blessing for the brick company installed a B. & B. two-bucket tramway, which has been instrumental in speeding up the production to an output of 50,000 brick per day, at a comparatively small initial and operating expense.

A 15-horsepower electric motor and a capable one-man-power operator constitute the entire operating force of this tramway, which has a conveying capacity of fifteen tons of clay per hour.

Without changing position, the attendant at loading station regulates the flow of material from right and left hand chutes alternately; and controls the power levers which drive the full buckets, 1,850 feet to mixer building, and the empties home on a parallel track.

These bottom dump buckets have a capacity of 25 cubic feet and travel along 1⅜-inch track cables. The pulling rope is ½ inch in diameter. Between loading and discharge stations are five intermediate supporting towers, Nos. 4 and 5 flanking the cement company's 300-foot quarry. No attendant is at discharging station, the buckets dumping automatically into chute.

That this tramway is giving satisfaction all along the line is evidenced by a recent letter from Otto C. Oehler, president of the Continental Brick Co. It reads in part:

"Our aerial tramway is operating very satisfactorily. It is in constant use, and we have no difficulty in carrying the tonnage guaranteed. We are very much pleased with it."

CHANGE PLAN

ting Coal to the Clay Products Manufacturing Industry Which In-
Policy, However, Has Not as Yet Been Definitely Decided Upon.

Fawcett

Sherman anti-trust law. In conference with the brick manufacturers, spokesmen for the fuel administration have related stories designed to illustrate how the leading men in other industries have been willing to "take a chance" in forming trade combinations but that has not moved the more conservative executives in the clay products industry. They point to the fact that the railroads would not take a chance of running counter to law—that is why we now have government control of the railroads—and that there is no more reason why brick manufacturers should put their heads in the noose. Even if Attorney General Gregory were to tell the brick manufacturers (which he has not done) that they may combine with immunity, his promise could not be expected to endure beyond his own tenure of office or certainly not beyond the continuance of the present national administration.

IN UNION THERE IS STRENGTH

One development of the recent turn of affairs in the conferences between manufacturers and the fuel administration that has come as an unpleasant surprise to the shrewder and more far-sighted men in the industry is the disclosure of a disposition on the part of certain groups of men within the trade to draw aside from the main body of manufacturers and not act in concert in the dealings with the government. If there was ever a situation where the old adage to the effect that in union there is strength would seem to apply it is in this trade crisis. Moreover, men on the inside at Washington tell me that there is scant chance for one branch of the industry to fare much better under war stress than the others. For example, it might seem that the government might be disposed to treat the paving brick industry with greater leniency than the face brick and common brick industries but, as a matter of fact, the government officials feel that with the government's policy of discouraging street improvements and highway construction that are not imperatively needed for military purposes there will be as much curtailment of paving brick consumption as of the brick that goes into building construction. Similarly, there are men in the face brick industry who thought that the day might be saved by curtailing the number of shades and textures on the market but it now appears that not more than 18,000 to 20,000 tons of coal could be saved by this remedy which would be heroic in the sense that it would wipe out good-will in many a valuable specialty.

⁂

Co-ordination of Country's Highways

Directors of the Highway Industries Association recently elected, were to be in Washington, D. C., the week of March 4, to impress upon the proper authorities that the organization is ready now to assist the government in winning the war by co-ordinating the highways of the country with the other transportation agencies of the world. It will aim to show that development of American highways will advance the economic life of the nation.

On the executive committee from Cleveland, Ohio, are Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, and Windsor T. White, of the White Automobile Co. With the other members of the committee, these leading interests in transportation questions will probably outline the activities of the association in carrying into effect its purpose and policy.

The present move is the first step following permanent organization in Washington, on February 16, at which meeting were adopted the by-laws and constitution and the appointment of the board of directors. Mr. Blair has been elected as director, representing the paving brick interests. Others represent different branches of road users, industries, civic bodies and the like.

⁂

Consignee Can Help Obtain Cars

The difficulties under which brick and other clay material men are laboring this winter are shown in a letter which was sent by the Beaver Clay Co., New Galilee, Pa., to its dealers and customers. The letter says:

"To all agents and dealers: Under the present winter conditions the railroads are up against it, and practically every point is under embargoes. The permits for cars to be shipped from our plant must all be obtained from J. W. Roberts, Penn Railroad Co., Union Station, Pittsburgh, Pa. A request from the consignees under the present system carries more weight than a request from the shipper, and the chances are very much better for the consignee to get a permit if the materials on orders are in any way connected with war work, such as fire brick or fire clay for furnaces or steel plants or founderies engaged on war orders, or for face brick used for housing in connection with war work factories. You can save time, therefore, if you have any orders that you want rushed thru, by having your consignees take up direct with Mr. Roberts the request for permits."

Many other firms are in the same position, but not all have seen fit to point out a possible solution of some of the difficulty. It is said, however, that as soon as the freight congestion is relieved, the railroads will be able to handle what is offered them. Perhaps not "business as usual," but "business better than usual" as soon as the machinery is in operation again, will be the slogan. Maybe if all firms took this way of informing their customers of their troubles some of the congestion would be automatically removed.

FIRING *a* PRODUCER GAS-FIRED KILN

Some Valuable Suggestions on the Firing and Maintenance of Proper Burning Conditions in Producer Gas-Fired Continuous Kilns

By Otis L. Helfrich

Author of "Notes on Waste Heat Tunnel Dryer Operation," "Prolonging Belt Life," "Overcoming Cracking in Drying Clay Products" and "Making the Bucket Elevator Trouble-Proof"

DURING THE PAST FEW YEARS a great deal has been written about the construction of continuous kilns, but there still remains something to be said concerning the actual operation, viewed from a practical standpoint. This article is written to point out general rules of procedure directly applicable to the operation of a gas-fired continuous kiln burning brick.

The phase of operation which naturally falls into first place in such a discussion is the starting of fires in a cold kiln. On a plant operated continuously the year round, the necessity of starting new fires does not often arise. Fires can be held for two or three weeks in a chamber before cooling down to a temperature low enough so that the gas will not ignite, and a continuous plant is seldom shut down for a longer period.

In starting the fires there are two main objects to be gained. First, the chamber must be heated sufficiently for the gas to ignite. When this condition is reached, the fires must be kept going in order to heat the air for combustion until the gas fires have enough cooling chambers behind them to heat the air without the assistance of outside fires.

STARTING FIRES IN NEW KILNS

When the kiln is new and is burned off for the first time, another problem of starting the fires arises, usually the drying out of the kiln walls themselves. This will necessitate going slower at the start and the whole operation will take about twice the time that a thoroly dry kiln requires. However, the same general procedure may be followed if it is remembered that the kiln walls contain much moisture which must be driven out before the kiln can be safely heated up to a very hot temperature.

Some kilns have regular fire boxes built at the end of the kiln which are used only for starting up the fires. They are built so that their combustion gases go directly over the flash wall into the chamber that is to be lighted. When not in use they are simply bricked up and form a part of the batter wall at the end of the kiln. These are useful during the heating up period but are not built in the more modern kilns for two reasons. In the first place, a chamber can be heated just as well by building fires in the cross-communicating flues in the floor of the preceding kiln, so that the fire boxes are not indispensable. In the second place the batter wall will be greatly weakened if it is cut up by building fire boxes along the length of it.

Wood is the best fuel to use at the start, as it gives a longer, cleaner flame for heating up, but after the fires are going well, coal may be mixed with the wood.

HEATING

It is best to have the first chamber that is being heated, an empty one. This will allow it to heat more rapidly and thus get a larger surface heated behind the gas in a shorter time. Another reason for leaving this first chamber empty is because there is no chance of getting vitrified brick in it, for with no more preheating of the air than is furnished by the small fires built in the floor of the preceding kiln, the gas will not produce a vitrifying heat. As the kiln would have to be burnt over again anyway it is much better to leave the kiln empty and thus hasten the time of getting the kiln under way.

The operation is as follows: We are starting at No. 1 chamber with the wood fires going in its floor. Chamber No. 2 is sealed up but empty, chamber No. 3 and those ahead of it set with brick. The floor brick will have to be removed from at least half of chamber No. 1 in order to get at the communicating flues to build the fires. The opening where the communicating flue passes under the partition wall into the next chamber should be partially blocked. This opening is usually about 9′ x 18′. If the full size opening is left, there will be such a strong draft that too much cold air will be drawn into the heating chamber. This opening can be easily blocked up by simply laying brick in the opening until a space of about two inches is left at the top. This will be ample space for the first stages of the heating up for it must be remembered that the small fires in the communicating flues are not capable of delivering a great quantity of heat. If too much air is admitted the heated air will be cooled down until the temperature is too low to be effective.

SLOW DRAFT TO HEAT QUICKLY

A word might be said here about cutting down the force of the draft at the start. It is best to get one chamber heated and the gas lighted as soon as possible. After the gas is lighted it will furnish heat much more economically and efficiently than the small hand kept fires in the kiln floor. The best way to heat the first chamber quickly is with a slow lazy draft that will allow the heat of the fires in the floor to be localized on the flash wall of chamber No. 2 rather than pulled away from it by a strong draft.

The draft can be lowered in several ways. One method is to connect several extra chambers ahead of the fire. If the chambers are not set so this can be done, the goose neck connecting the chambers to the draft flue can be dampered. If the goose necks are not supplied with dampers the same result can be obtained by placing the goose neck over just a portion, the manhole leading to the draft flue. This will cause part of the force of the fan to be wasted and thus check the draft going thru the kiln. Whatever method is used it will be found that much better results follow if the draft is cut quite low at the start.

Gas should be turned into chamber No. 2 just as soon as the flash walls are hot enough for it to ignite. This will be evident when the red is just beginning to appear. When the gas has been lighted the heating up will proceed much more rapidly, but it is necessary to keep the fires in the floor going until there are at least two cooling chambers set with brick behind the last fire.

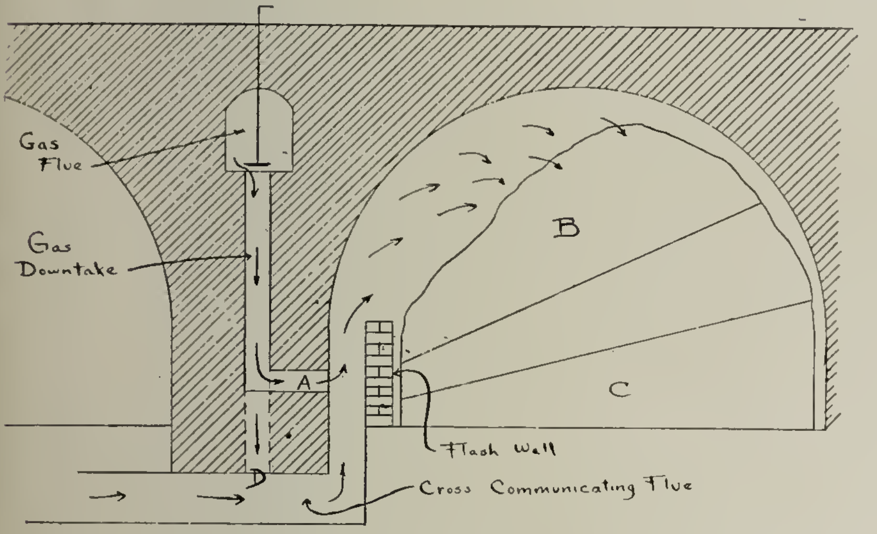


Fig. 1. Sketch Showing How Better Burns Were Obtained by Changing the Position of the Opening of the Gas Port Into the Chamber of the Kiln.

NECESSARY TO REBUILD BRICKWORK

The floor in the chamber where the wood or coal fires are built will invariably be damaged. This is because the brickwork in the floor on one side of the chamber is heated and expands while the other side remains cold The whole force of this experience is thrown on the arch over the lateral draft flue running under the center of the chamber floor. Since the arch has no supporting weight of brick on top of it, it naturally yields to the force and rises, usually damaging the brickwork of the arch to such an extent that it must be at least partially rebuilt.

When the kiln is once started and all the fires going, the main essential is to have common sense on the job every minute of the twenty-four hours each day. Burning a kiln of any kind requires very close attention and this is especially true of gas-fired continuous kilns. The gas valves, are either eternally choking with soot and the fires cooling down or some of the soot that is already on them is dropping off and letting too much gas thru the valves.

RICHNESS OF GAS CAUSES VARIATION IN FIRES

Another thing which causes variation in the fires is the varying richness of the gas coming from the producers. When a fresh charge of coal is thrown into the producers, the gas will be richer in heat units and will burn differently than when the fires have burnt down. This irregularity is remedied to a certain extent by intelligent firing of the producers, but gas of an absolutely constant richness can hardly be hoped for. Stated simply, the successful method of firing a continuous kiln is to keep up a steady march from one lighted chamber to the next.

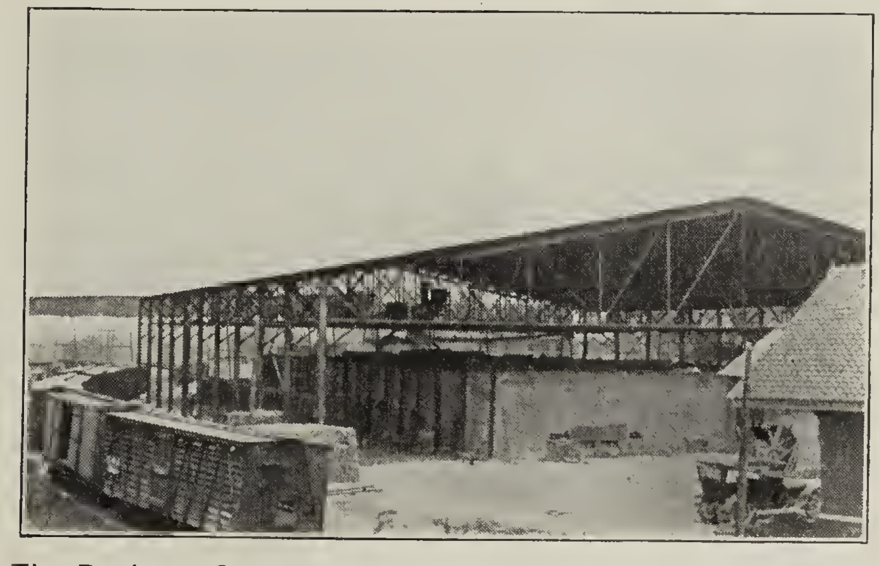
REMOVAL OF SOOT

The problem of soot collecting on the gas valves is one that must have pretty close attention, for it is settling on the valve and valve seat constantly. However, it is an easy matter to clean them by simply "shaking them down," that is, raising the valve two or three inches and letting it drop. Some kiln firemen never adjust a valve without giving it a slight jar to clean the soot; others shake them down every two or three hours depending upon the amount of soot formed by the particular coal they are using. An experienced man can tell by the hazy appearance inside the kiln whether the valves are becoming choked with soot or not.

While we are on the subject of soot it may be well to say something about another problem which sometimes causes considerable trouble. The small gas downtakes leading from the gas flue on top of the kiln down thru the partition wall to the communicating flues where the gas meets the air for combustion are never very hot. As a result they become choked with soot and, of course, shut off the supply of gas. They can be easily cleaned, however, by removing the cap around the valve rod on top of the kiln, setting the valve to one side and running a long rod or pipe down thru the down-take. By striking the rod against the sides of the down-take the soot will be knocked off and will drop into the combustion chambers and be burned. This is a hot job, but if caution is used and the man keeps away from the opening until the gas in the gas-flue ignites, there is no danger attached to it.

VALVE ADJUSTMENT

Before the burner starts on his rounds to adjust the fires he reads the temperature of the first chamber from the pyrometer. From this he knows whether the chamber is too hot or too cold and, therefore, whether the valves in the dark places should get more gas or the brighter places be shut off a little. When he knows where the temperature of the chamber stands he then adjusts the valves until there is a uniform temperature all the way across the flash wall. It takes careful work and some little time to do this for the tendency is to change the valves more than is necessary, in other words, to shut off the hot ones too much or turn too much gas into the cold ones. The ability to judge just how much to change a valve is something that must come from experience, but if the burner is reasonably observing it does not take long to learn.



The Producer Gas-Fired Kiln of the Alton (Ill.) Paving Brick Co.'s Plant Has Proved to Be a Great Fuel Saver.

Some kilns are equipped with small ropes which are attached to the valve rod, run up over a couple of pulleys and down the side of the kiln ending at the side of the peep-hole. Then the burner can look into his kiln, see a valve that needs adjusting and adjust it by shortening or lengthening the rope attached to that particular valve without leaving the peep-hole. This contrivance saves the burner many unnecessary steps spent in climbing to the top of the kiln to adjust a valve and then climbing down to the peep-hole again to see the effects of the change. It also tends to make him more careful in his work for after a man has climbed to the top of a kiln and down again all day a valve will have to be in real bad condition along toward quitting time to furnish the necessary incentive for him to mount the ladder again. If he can adjust the valves without leaving the peep-hole, however, he will probably stand and fuss with the valves until he gets them just right before he leaves them. The valves can also be shaken down with these ropes without leaving the ground, by simply pulling the ropes until the valve has been lifted two or three inches and then giving it plenty of slack. In these days of discontented labor, little contrivances of this sort go a long way toward making the employe's attitude toward the company full of good feeling.

Simple to Operate and Easy to Control are Advantages Possessed by the Producer Gas-Fired Continuous Kilns

The two valves at either end of the chamber must be kept a little more open than the others due to the fact that there is bound to be more or less leakage of cold air thru the kiln doors, which must be taken care of by the combustion of more gas at the end valves.

After the valves have been adjusted it is never wise to leave them for more than twenty to thirty minutes. Toward the end of the burn, brick can be damaged in a remarkably short time. If some soot or other obstruction should fall from one of the valves and in this way allow larger quantities of gas to flow into the chamber, it takes only a little while for the heat to rise high enough to cause overburned brick. It might be that a chamber will go several hours without needing any change made in the valves but it is never safe to count on such a possibility and let me repeat, "eternal vigilance" should be the watchword of every burner who wants to be sure of his success.

PROPER COMBUSTION

A point of construction may be brought up here which is very important and is sometimes neglected. It is necessary for the gas to burn sufficiently below the top of the flash wall to make combustion complete before the gases go over the top of the wall and mix with the ware. If this is not the case, the gases will still be burning when they mix with the brick. This will cause a very high temperature among the first few layers and a reducing atmosphere. The result will be overburned product at the point when the gases first strike the ware and soft, underburned product on the floor of the kiln.

The distance down from the top of the flash wall to the point where the gases meet the air and burn, varies with different kilns, depending mainly upon the strength of the draft. The usual distance is about five feet, which seems to give the gas plenty of time to burn completely between the time it strikes the air and before it gets to the ware. If it is found that the gas is not burning completely before reaching the top of the flash wall, there are two things that can be done; either lower the point where the gas meets the air for combustion or raise the flash wall. Either remedy will cause the gases to travel farther after the gas mixes with the air and starts to burn and thus give the gas more time to burn out completely before striking the ware.

When the kiln is on high heat the flame should not be visible above the flash wall, except possibly at two end valves where more gas must be burned to overcome the effect of cold air leaking in thru the doors. When the gas is first turned on in a chamber it is advisable to get the chamber heated up as rapidly as possible. At this stage it does no harm to the product to have the gas burn while passing thru the ware and it is best to open the valves so wide that the flames will go up over the flash wall in order to get the temperature up as soon as possible. However, as soon as the temperature gets to be near the carrying or finishing point the valves should be closed down enough to prevent the flames from going over the flash wall. If it is found when the gas is turned this low that the temperature of the chamber cannot be kept high enough, then one of the two things outlined above should be done. This will allow enough gas to be burned so that the temperature is kept up and yet the burning gases will have to travel far enough so that combustion will be complete before they strike the ware.

TO OBTAIN UNIFORM BURNS

The writer recalls an instance which illustrates the point very well. At an Iowa plant burning hollow ware the gas was allowed to meet the air for combustion at A as shown in Fig. 1. This opening at A was situated in height about half way between the floor of the chamber and the top of the flash wall. This left just a few feet for the gases to travel from A, where they mixed with the air, until they went over the top of the flash wall and mixed with the ware. The result was that the combustion was still going on after the gases struck the ware. This caused overburned product in that part of the chamber marked B and underburned product in the portion marked C. To remedy this the opening at A was closed and the gas down-take carried on down to D. After this change

Showing Outer Side of Producer Gas-Fired Continuous Kiln of the Streator (Ill.) Clay Manufacturing Co.

the gas met the air and combustion started at D instead of at A. This allowed the burning gases to travel several feet farther before reaching the top of the flash wall and combustion was complete before the gases reached the ware. As a result, burns of a practically uniform hardness were made from top to bottom of the kiln.

BRICK CASINGS

The type of casing built in the door of a chamber is very important. Because of the strong draft necessary to carry the gases thru a continuous kiln there is much leakage of air thru the doors at all times. Double casings should be built at each doorway and should be kept mudded and well broomed at all times. A very good method of building casings is as follows: Build up a single brick casing first and mud it thoroly. Then build a second casing standing about three inches from the first. Fill the space between the two casings with fine sand and mud up the outside casing.

It may be found that the mud which is plastered over the casing will crack considerably. This trouble can be lessened by adding sand to the mixture. The amount of sand necessary will vary with the clays used for the mixture, but by experimenting with the different amounts used, a mixture of sand and clay can be formed which will cut down the cracking to a minimum. The small cracks that appear can be filled by soaking an old broom in water after the clay has become hard and brushing the surface of the clay plaster with it. This should be done every time small cracks appear, for with the suction there is in a continuous kiln a large quantity of cold air can go thru a very small crack.

CHAMBERS TO BE CARRIED

The number of chambers carried behind and ahead of the fires vary according to local conditions. If the kiln is not pushed too hard it is best to carry the combustion gases thru at least three chambers ahead of the fire. This will mean that the gases are pulled from the kiln at a very low temperature and the minimum of heat wasted. If the setters are behind and the kiln ahead not set, the gases can be pulled from the second chamber ahead of the fires. But in this way much heat will be wasted and careful watch will have to be kept over the exhaust fan to see that the exhaust gases do not become so hot that they will injure the fan. It is customary to allow the air to be pulled thru four cooling chambers behind the fires. But this also is a question to be decided for each individual case, as it depends upon whether the main object is to conserve the heat—when more cooling chambers should be carried behind the fires—or to get to the chambers of ware as soon as possible in which case fewer chambers are carried.

CONDITION OF FLUES AFFECTS DRAFT

The draft in a continuous kiln is a very important factor. One thing which influences the draft a great deal is the condition of the flues under the kiln floor. They should be examined regularly and at all times kept free from sand and clays which drop thru the floor into them. The gas flues leading from the producers to the gas uptakes will clog with soot quite rapidly and must be burned out periodically. This is usually done about every four to six weeks, depending on the kind of coal used and the size of the gas flues. For this operation a burn out stack is built at one end of the flue. The producers and kiln are dampered off from the flue and air admitted at the end of the flue opposite from the burn out stack. The soot in the flue will be hot enough to burn so that all that is required is to furnish the necessary air and combustion will take place, cleaning the soot from the flue.

The ordinary methods of taking settle readings to determine the progress of the burn can be followed. However, the settle should be taken at several points across the length of the chamber to see that one section of the chamber is not advancing more rapidly than another. Trials can be pulled from the top of the kiln to test for oxidation or finish of the burn. If carbon is present to any extent in the clay it is advisable to test a sample for black core in the chamber ahead of the one where the gas is about to be turned on. If a sample drawn from the top of the kiln ahead shows no evidence of carbon, you can be sure there is no carbon in the ware at the bottom of the chamber behind this one and that it will be safe to start heating it up.

The operation of the gas producers in connection with a continuous kiln is a very important phase of the burning. The best results in burning can only be obtained when the gas is "right." It is too large a subject to treat here and a later article will be devoted to the principles of firing gas producers.

Every continuous kiln has a different set of problems attached to it but if the problems are analyzed, they will usually be found to go back to a few first principles which if followed will lead to the solution.

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Increases Selling Capacity

The Reliance Brick Co., of Kansas City, Mo., has taken over the selling handled by the Hawkeye Brick Co., Des Moines, Iowa, and that office will now be maintained as a branch of the Reliance company. Mr. Charles Spikings, secretary of the Reliance Brick Co., will be in charge of the Des Moines office, at 311-312 Hubbell building.

The Reliance Brick Co. is a strictly selling concern and the Des Moines office will handle the entire state of Iowa, having made arrangements with the Boone (Iowa) Brick & Tile Co., the Des Moines (Iowa) Clay Co. and the Kansas Buff Brick Co., Buffville, Kas., for the exclusive selling of their material in the state of Iowa.

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Canada's Chromite Production

According to the preliminary report on the mineral production of Canada during the year 1917, just issued by the Department of Mines, Ottawa, Ont., the total shipments of ores and concentrates by mine operators was 36,352 tons, valued at $490,001 containing approximately 8,626 tons, or an average of about 23.7 per cent. Cr_2O_3. A portion of these shipments was made to the Customs mill at Lakeside, Black Lake, and the final shipments from the district of ores and concentrates was 23,327 short tons valued at $572,115, and containing approximately 8,465 tons of Cr_2O_3, or an average of 36 per cent.

Most of the concentrates shipped averaged 50 per cent. Cr_2O_3, while a large percentage of the ore shipments averaged about 32 per cent.

The production was as usual obtained from the Eastern Townships of Quebec, chiefly at Black Lake, and Thetford, with an important contribution from the new area at St. Cyr, in the township of Cleveland.

The mine operators shipments in 1916 were 27,517 tons valued at $311,640 and containing approximately 6,759 tons, or an average of 24.5 per cent. Cr_2O_3.

The exports of chromite as reported by the Customs Department, were 19,229 tons, valued at $342,528, as against 12,633 tons valued at $152,534, exported in 1916.

A SCRAP *of* PAPER PLAYS *an* IMPORTANT ROLE

In This Article Mr. Greenwood Shows How the Up-to-Date Tabulation of Kiln Contents Enables the Sales Manager to Tell at a Glance in Just What Position the Company is to Accept or Fill an Order, and Also Prevents a Shortage of One Size or Shape While There is a Surplus of Some Less Profitable Shape

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company, Uniontown, Pa.

"THAT was a mighty good investment," said the General Manager, laying down his pencil and looking up as Barnes who had just entered with a number of large sheets of paper, had taken a seat at the opposite side of the big flat top desk used by the big chief.

His predecessor had always used a large roll top desk, full of pigeon holes, and each one stuffed with papers. Each paper was folded in the extremely inconvenient manner required in such cases, and when anything was wanted, it was necessary to take out the entire contents of several of the compartments and go thru the papers one by one, unfolding and refolding them.

"Good investment? What? Liberty bonds?" queried Barnes.

"Sure, Liberty Bonds were a good investment for the company. But what I had in mind just now was that automatic dump, which was put in last year and which eliminates one man. It was originally felt that this would pay good interest on the cost of installation. Now we see that it will pay for itself in this year alone."

"Even if it did not pay for itself in direct saving," said Barnes, reaching over and confiscating the pencil the G. M. had thoughtlessly laid down, "it would pay for itself indirectly in enabling the plant to run with one man less. A shortage of one man may cause a lower production, if not a complete shut down of a plant for the day."

"Yes," said the G. M., mentally saying goodbye to his pencil and resigning it to its predestined fate, "and under such conditions, one has to find work at something else for the force which is on hand, and this isn't profitable. Yes, it was a good investment."

"It pays to advertise, doesn't it?" commented Barnes, reaching in his pocket for the knife Miss Lane, his stenographer, had given him for Christmas. "Every time that machine dumps, it calls attention to itself, and thus secures full credit for its achievements. Now here is a contrivance which will pay just as well, and requires no investment to speak of. It makes its contribution silently, while your dumper blows a trumpet before it. When one looks at a strong current of water, he realizes its power, while a small wire over his head may carry a far more powerful current and never be noticed."

"Do you mean that the bunch of paper you have before you, with a few scattered figures on it, will pay as much profit as the automatic dump?"

"I'll do more than say it. I'll prove it," spreading out the sheets as he spoke, and completely covering the desk.

"Mr. Barnes, you take up as much room with your display as my wife does when she lays out the pattern for a new dress," said the G. M. with assumed indignation as he shifted the ink well to a convenient chair.

"That merely shows how much more business judgment your wife has than we have," calmly responded Barnes. "Before cutting into the material, she fits the different parts of the pattern together, so as to eliminate waste of the goods. Just the opposite of what we do."

"I agree with you. There you have a lot of large sheets, laid side by each, with a few figures, and if they had been written closely together you could have got them all on a single sheet of eight and one-half by eleven letter size paper. At the present price of paper, instead of saving, it looks the opposite to me."

"A job printer could save a lot of valuable space if he were to keep all his type in a sack. Besides, he wouldn't have to distribute the type. When a job was done, all he would have to do would be to loosen up the chase and dump the contents, instead of putting it letter by letter and piece by piece into the cases for the various fonts. But now just run your eye up and down the left hand side of the left hand sheet. See the names of all these customers?"

The G. M. nodded.

"Notice the Burkitt Steel Co. at the top of the list. Run your finger along the horizontal line on which their name appears, and you will see what they have on order, each item under its own heading. These sheets contain all their orders placed with this particular plant. Each shape and each different brand has its separate column. Here at the bottom are the totals. At least, they were the totals a week ago when these sheets were made up."

"I see," said the G. M., running his fingers thru his auburn hair. "You can tell by these totals just what you have on order for each different shape. By looking up and down any particular column, you can tell to whom the different shapes go in each case. But unless I am much mistaken, you have something else up your sleeve in addition to the tabulation of these orders."

KILN CONTENTS TABULATED

"You are a good guesser," laughed Barnes, beginning to cut out rings around the captured pencil. "Just run your eagle eye down among the tail feathers of the report and you will see all the kilns listed, showing the quantity of each shape in each kiln, all under appropriate headings."

"I see," again acquiesed the G. M. "But what are those hieroglyphics opposite each kiln number?"

"They tell if a kiln is filling, burning, cooling, or unloading. In the case of a burning kiln, they give the date fired. In the case of a cooling kiln, the date it started to cool. Next, you will see two additional lines, one showing the quantities made up and drying, the other showing the amount in the stock shed. Then all these are totaled at the foot of the section."

"I get you," interrupted the G. M., hastening to show that he had caught the point. "You can see not only how much of each item you have on order, but how much you have made up applying to the orders booked. You can tell just where you are at, as the learned member of the house of representatives once remarked. Now here we find," he continued, running his finger down one of the columns, "orders for shape number 165 totalling 10,000 pieces. And in stock and kilns a total of 14,000; none drying. Yes. That dope isn't half bad. If some one phones in and wants two or three thousand of these shapes, we can tell right off the reel that we have them available, and from the state of the kilns just about when they can be ready for shipment. Have I interpreted your sheets correctly?"

"You are going strong," said Barnes, admiringly. "Just wait until you get your second wind and you will be ready for another run."

"Second wind reminds me of the sign outside a rural garage," said the G. M. "It read, 'Free Air if you put it in Yourself!' "

"What do you find about shape number 23?" questioned Barnes.

"That's easy. Total orders booked, 15,000. Total in stock and in the process of manufacture, 8,000. This leaves 7,000 yet to be made up. But why spring this shape on me?"

Working as industriously at his carving as a girl knitting her first sweater, Barnes responded, "You probably know that, from the standpoint of selling prices, shape 23 is more profitable for us to make than is shape 165?"

The G. M. nodded, as he continued. "Well, all the time the plant was making up these extra number 165 shapes, we were needing number 23 shapes. We sacrificed orders both necessary and profitable, to make up shapes which may even have to go into stock. We have held up customers and tied up capital, and have been losing money during the process. Had you any idea such things were going on?"

"Indeed I hadn't. Why in the world would the superintendent make up all these stock shapes and neglect those on order? Can't he see that it means extra work later on from a manufacturing standpoint alone, to say nothing of the larger phases you mention, when he will have to stock and rehandle these surplus 165 shapes?"

"Can we fairly criticise him for overlooking something we ourselves have just discovered?" admonished Barnes. "They do not have, at the plant offices, a force of men who can tabulate their orders and make up production schedules. As for the rehandling, there appears to be so much

"That Was a Mighty Good Investment," Said the General Manager, Laying Down His Pencil and Looking Up as Barnes, Who Had Just Entered, With a Number of Large Sheets of Paper, Had Taken a Seat at the Opposite Side of the Big Flat Top Desk Used by the Big Chief.

of this that it is taken as a matter of course, and no one bothers very much to find out how much of it is unnecessary. And how would the superintendent know which shapes are the more profitable from the standpoint of selling prices?"

"That's so. When they are running on shape number 165, the nine inch equivalent output is considerably larger than it is when they are running on shape number 23. And we have been hammering away at the plants to keep up their production. We have urged them to make what they could produce most of, instead of what they could produce most profitably. What's the remedy, do you think?"

MOST PROFITABLE STOCK SHAPES FIRST

"Just this," adding another ring to his line of defenses; "take the difference between what is on order and what is made up. This will tell what, if any, are still needed. In the case of stock shapes, especially where they are of the more profitable kind, add the quantity we should carry for stock. From these figures, deduced from the above sheets, it should be possible to make up production schedules which would avoid stocking up on unnecessary and less profitable shapes. Rush orders would not be sidetracked, as in the present instance, for the manufacture of non-essentials."

"You would strike trouble, Mr. Barnes. No one can tell a superintendent today what he should make tomorrow. He might not have either the raw material or the force. A machine may break. Molds may be out of commission. He has to look ahead in the setting of the kilns. Material which may be set in one kiln may not always be set in another kiln. Brick which go on top of kilns cannot always go in the bottom courses. One cannot run a brick plant as he runs a typesetting machine—just by pressing keys."

"You certainly got your second wind, but you sure did start out in a direction different from my anticipations. Now instead of making a hard and fast, inelastic shedule, suppose we were to try this: Make up a list of needs, and label them in accordance with their relative importance. Suppose the most important items to be made up are marked A, the next in order of importance, B, etc. When the superintendent strikes a snag in making up the A class, he can fall back on class B without asking any questions. If blocked there, he has class C to act as a safety valve. How would this strike you?"

"That would be decidedly better. But who would classify the shapes into the A. B., C groups?"

"That can be done satisfactorily only by the sales department. They only can know what orders are of most importance. Being in touch with the market, they should know what stock will be needed."

"Good idea. Let's find how it strikes them," said the G. M., pushing a button and in response to the deep mellow buz of the indicator, Miss Jemmett appeared. The G. M. never buzzed for any head of a department directly, but had messages delivered to them in person.

"The Big Chief wishes to see you when it is convenient," said Miss Jemmett a moment later to Mr. Baldwin, the sales-manager, who finished taking by phone his wife's shopping list and lowered himself under the doorway into the General Manager's sanctum.

"Mr. Baldwin," he asked, "In accordance with the suggestion made when we were discussing sales and shipments some time ago, our puzzle solver here has been making up a set of tables. Have you seen them?"

"Indeed yes. Cracking good scheme. I know that if we can put it into practice, it will save me a lot of worry."

"Didn't know you had any," said Barnes. "These days it's the fellow who has the material to make who has the worries. All you sales people have to do is to look wise and shake your heads when an order is proffered you."

"Don't you think it. Here we told one customer who uses a special arch brick that we could not furnish his brick for six months. Before we know what the operating end has been up to, they have made up and shipped him enough for an entire year. He has them piled in, around, and over his stock shed, while more are coming in every day. If you think it isn't work to explain to that man why he is getting swamped with brick he isn't needing, and on the other hand explaining to a lot of other fellows how impossible it is to get out their brick, just you try it once."

"The Big Chief Wishes to See You When It Is Convenient," said Miss Jemmett a Moment Later to Mr. Baldwin, the Sales-Manager, Who Finished Taking by Telephone His Wife's Shopping List.

"Do you think this plan will eliminate these difficulties?" asked the G. M. following with a description of the A, B, C production system which Barnes had suggested.

"Can't be beat. As it is now, the operating department makes up what it has on order, with limited knowledge as to what is of most importance. It is so customary for all orders to be marked 'RUSH, RUSH, RUSH' that the operating department naturally pays no attention to them. It is like the priority orders of the government. There are so many priority orders that there is no priority. Then the operating department makes a stagger at producing material for stock, with the result that the stock shed gets burdened with junk instead of live material. Some weeks ago they made up a bunch of stuff, and when it was about ready to unload from the kilns, I circulated among the users of this particular product and dug up an order to cover the quantity coming thru."

"That ought to have tickled the manufacturing end," urged Barnes, with the object of keeping the sales manager wound up, grinning to himself as he continued the slaughter of the pencil.

"It did," declared Baldwin, waving his arms excitedly. "The superintendent said when he received the order, that it was a fine thing he had the brick already made up for this order. He was like the man who looked at the tunnel thru the moutain and said what an excellent thing it was for the tunnel that the mountain happened to be there, just exactly where the tunnel was located to go thru it. And then that superintendent was so charmed with his forethot that he went right to work and made up a bigger quantity of the shapes than before. They are now in stock. They will be there for a coon's age. This wood chopper here sure has the subject doped out right."

SALES AND OPERATING HEADS MUST CONFER

"Then as I see it," summed up the G. M., "these sheets show the amount of each standard or special shape or order for a certain plant, the quantity made up and in the process of manufacture. From these we can see where we need to speed up production, and what standard stocks are falling below par. In case it is not possible to maintain stocks of all standard shapes in advance of orders, we can specialize on those which pay best, taking both manufacturing and selling factors into consideration. This would not leave it to the manufacturing end to make up what afforded the largest production, regardless of the selling advantages. And the classification of the items covered by the production advices will render them sufficiently flexible. Is that the method?"

"That ought to cover it," admitted Baldwin; "however, there is still another advantage in this production advice policy. Suppose we are morally sure that we will secure an order for a certain quantity of material, and that the customer will be gratified by our having the material already under way by the time he places the order for it. By this method, we can direct the activities of the operating end along this channel. Now the sales department sits on the cow catcher of the train looking for the orders which are coming our way, the operating department sits in the observation car looking at the orders already on the books, without even a speaking tube between them. Each sees but one phase of the subject."

"But shipments are being made right along, and material is being made up continually, so it would seem to me that your sheets would rapidly become obsolete," suggested the G. M.

"Not so bad as that," defended Barnes. "It takes but an hour or so to make up the table, and the paper will stand a lot of erasures. Each week would be often enough to bring the table up to date, rubbing out and changing the amounts of the orders which had been entirely or partly shipped, cancelled or otherwise modified, and changing the kilns so as to bring these, as well as the stock and the green brick, up to the minute. Of course, the more frequently it is made up, the fewer changes there are, and the quicker it can be done."

"Also, the more closely it is kept up to date, the more value it is to the sales department," added Baldwin. "As has been already developed, it is the only feasible guide for making up production advices to the plants, instead of putting the burden upon the plant offices; but by knowing the orders booked, the quantity made up, and the production schedule, one can answer promptly any question as to when material could be made up covering any new inquiry."

"Well, Mr. Barnes," said the G. M., smiling, "I confess you have proven your point. While it may not do so as emphatically, I will admit that indirectly your large sheets of paper may bring as great a return as does the automatic dump."

Snapping the tortured pencil across the desk with a quick gesture, Barnes shot back, "If you admit that conclusion on the basis of what we have just developed so far, what will you say when you find that we have not yet touched upon the real money saving feature?"

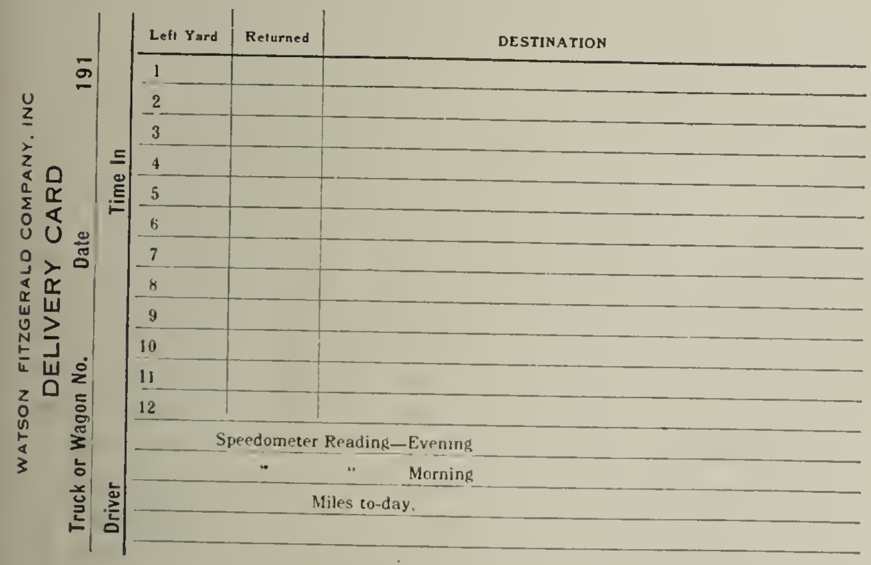
The G. M. reached in his desk, pulled out a piece of soft pine, and handed it to Barnes. "Fire away," he said.

"If it's all the same to you, I'd rather wait a few days. Then I can illustrate my point better."

* * *

KEEPING DELIVERY COSTS BY CARD

DELIVERY COSTS and records, altho apparently essential and necessary, are in the possession of but few manufacturers of and dealers in clay products. The cost of operating a motor truck or a horse drawn vehicle is a subject very elusive to definite determination. A very interesting and complete card is now in use for the purpose of accurately determining delivery costs and keeping track of trucks at work by the Watson-Fitzgerald Corporation, brick manufacturers and dealers in Danville, Va.

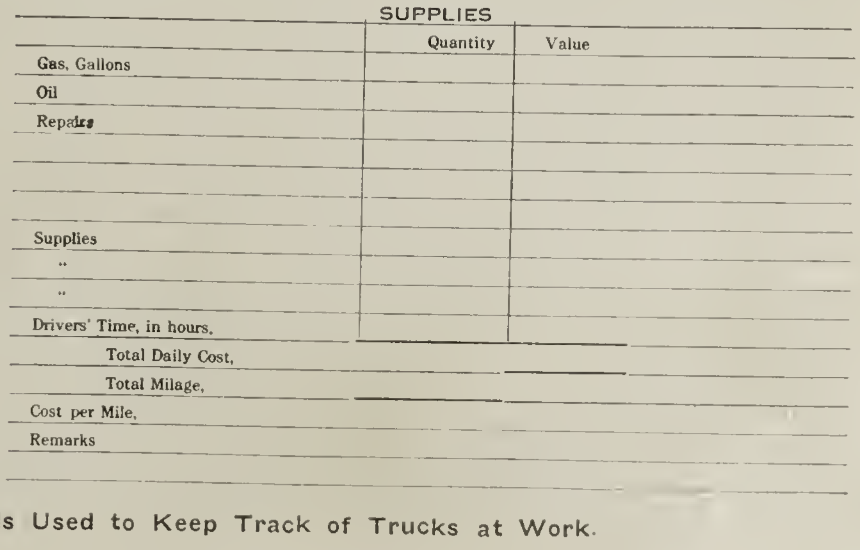


WATSON FITZGERALD COMPANY, INC
DELIVERY CARD
Date 191
Truck or Wagon No.
Time In
Driver

	Left Yard	Returned	DESTINATION
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Speedometer Reading—Evening
" " Morning
Miles to-day.

The information contained on this card, reproductions of both sides of which are shown, makes it possible to locate immediately any one of the company's trucks out on work, to ascertain the name of its driver and to determine the number of miles it had covered during the day. All of this information is contained on the face side of the card while the reverse is used for notations concerning the cost of operation, consumption of fuel, and other very important information. The Watson-Fitzgerald Corporation uses this form for both truck and team hauling and finds it satisfactory, according to J. N. R. Watson, general manager of the company.



SUPPLIES

	Quantity	Value
Gas, Gallons		
Oil		
Repairs		
Supplies		
"		
"		
Drivers' Time, in hours.		

Total Daily Cost,
Total Milage,
Cost per Mile,
Remarks

Showing Face and Back of Delivery Cost Cards Used to Keep Track of Trucks at Work.

MECHANICAL OPERATIONS INVOLVED *in* FIRING DOWN-DRAFT KILNS

Varying Conditions and Clays May Affect the Treatment in Burning; But the Following Rules of Burning Procedure Will Be Found Equally Applicable to All Conditions

Staff Article

A SERIES OF ARTICLES on burning such as is being published in this issue of *Brick and Clay Record* would hardly be complete without writing some words on the general procedure to follow in all burning. While each plant may have its own peculiar physical conditions to contend with which would make it impossible to follow a set formula for burning there are certain factors which must be observed by all concerns if good and consistent results are to be obtained. Altho the matter which follows deals mainly on the mechanical operations involved in burning where coal is the fuel used, the same general principles are applicable to burning where other fuels such as producer gas, lignite, natural gas, or oil are used.

To build up a good live bed of coals in the fire pockets in a short time, a few scoops of coal are added at short intervals, or as fast as the coal can be coaxed into burning, until it is up to the top of the slant grates. When horizontal grates are used, they should be covered within two or three hours.

It is not bad practice to close up the furnaces rather tight for a few hours, in order to redden up and secure a local heat in the boxes, a hot box aiding combustion and promoting draft, giving a shorter interval of stagnant fires as a result.

After securing a good bed of coals, fire light and often and keep the fires thin and open. In this manner a steady uniform supply of heat can be generated, fed into the kiln, and assimilated by the ware. Emphasis is placed on each of these points, and particular stress is placed on the necessity for an open fire.

Under no circumstances should you allow the box to reach a white, dazzling heat since it absolutely defeats all efforts towards economical burning and produces only negative results. Few clays can stand this high degree of temperature, even for a short interval, and as a result, pulled heads and stuck brick result. Overburned and swelled brick are inevitable.

FIRING LIGHT AND OFTEN

To fire light and often is the best method to control the fuel bed, a constant uniform quantity of heat is produced, and the nearest approach is made to the mechanical stoker, which obviously is economy. It is harder, much harder, but it is right and if it is right, that ought to "cinch" it for "light and often."

It is very important to fire thin. Never fire heavy, don't let the fuel bed get thick (for no burner can handle it); it's a coal waster. Probably no better advice could be given at this point, than to suggest the use of the small shovel on all horizontal grate fires, discarding the scoop absolutely.

If a burner fires a heavy, thick bed of coals you can tell it miles away by the dark, heavy clouds of smoke that pour out of the stack. You have noticed the burner who fires at intervals of forty-five and even sixty minutes and then chokes, in turn, each furnace to the brim with coal—here is the result. The heat in the furnaces immediately roasts out of this fresh fuel, all of the volatile gases. These rich gases roll into the kiln in clouds and it is a physical impossibility to supply enough air or oxygen to cause them to burn, and so they "go up the chimney"—as wasted fuel. But that isn't all—that smoke and gas is comparatively cold, and it actually robs the ware of its accumlated heat as it goes through the kiln. Instead of adding to the heat content it lowers it, and continues to lower it until such time as the furnaces start producing normally, which is usually ten or fifteen minutes later. After the volatile gases are burned out and exhausted, the fixed carbon in the bed of coals burns at high efficiency.

In firing slant grate and dead bottom furnaces, don't throw the coal into the box, or allow the fresh coal to roll down inside, but place the coal on the top of the fuel bed where it can coke and then slide by gravity farther down into the box. If the bed of coals does not slide down, it is usually sufficient to rest the shovel on it, the additional weight causing the mass to settle and cover the bars to the proper thickness. By this procedure an action similar to a coking plate is secured.

The horizintal grate furnace may be fired lightly to each corner, allowing the center to take care of itself, or all the coal is placed on a plate in front of the grates and is pushed or spread over the grates after it has coked.

The thick fire is stagnant and lifeless, the grate spaces are filled with ash and clinker, and the box is not productive, although it actually seems to be doing great work. It is hard to clinker and clean, and the use of the clinker bar is necessary in order to break up the matt. This constant stirring up will in itself cause the formation of clinker.

A fuel bed—four, five, or not to exceed six inches—is good practice at this stage.

CLINKERING

The operation of clinkering the fires offers a fertile field in itself, for economy in both effort and fuel.

The fires should be cleaned *whenever they need it—not at stated intervals.*

On a round down-draft kiln, it is splendid practice to clean every other or alternate furnaces; thus on the second time around, you will have furnaces on each side of the furnace being cleaned, that are clean and producing heat sufficient to neutralize the cold air that is pouring thru the box or boxes that you are clinkering. Also the excess quantity of volatile gas and smoke that is being roasted from fresh coal is minimized.

FIRING THIN

The same principle applies on rectangular kilns. Here it is best to clean one side at a time, using the same scheme—to clean every other box, returning and cleaning the balance of the boxes, and then starting on the other side of kiln as soon as the cleaned boxes are producing.

This procedure and variations of it prevents the chilling of the kiln, and all gases from fresh coal are consumed.

Lowering the damper also tends to conserve the heat, altho it is usually hardship for the fireman, inasmuch as he is exposed to considerable more heat and gases.

OPEN FIRES

Now for another important point—"keep the fires open." It will be recalled that our objective in this period as noted above, is to get the heat into the bottom of the kiln without settling the top ware, and there is only one way to get it there in a hurry; *it must be carried by an excess of air that is not needed to support combustion.*

If the furnaces are closed up tight, we secure only a local heat in the furnace and in the top of the kiln, so it is necessary to heat up a minimum quantity of excess air and have this air carry the heat to the bottom and deposit it.

Air must be used as a carrying agent; there is no other way. Open up the boxes, heat up the carrier, and then use the damper.

It is not necessary to constantly carry a high white heat in the boxes, but it is necessary to save and accumulate the comparatively low heat that is generated, and distribute it uniformly in the lower courses of the ware (lower courses being specified because the top will take care of itself).

DRAFT AN IMPORTANT CONSIDERATION

It is usually correct to carry a draft just short of roaring. Do not allow the draft to become so strong that the fires roar. A larger quantity of fuel is burned, and the resultant heat is carried through the kiln and whipped out of the bottom into the stack. The bottom ware cannot absorb the heat due to the sharp draft, and such heat as it does absorb is easily lost if for any reason gases of a lower temperature are fed into the kiln from furnaces that are needing fuel and are not immediately replenished.

Too sharp a draft also has a tendency to burn air-holes in the bed of coals on the grates and if these are not detected the furnace is inefficient; while seemingly carrying its fair share of the load it is in reality doing no work at all, its energy is being expended in heating up an excess of cold air that is not needed.

HEATING BENEATH THE FLOOR ESSENTIAL

Do not feel that you are unavoidably wasting fuel in heating the underflue work, for this must be done. Of course, it does not burn the ware directly, but it serves to bring the tapering off point of the maturing heat *below* the floor level where the bottom courses of ware are set. This line of demarcation between heat that is sufficient to mature the ware and the heat that is not high enough, *must be below* the floor-brick. This is more easily accomplished with a deep system of underflues than with a shallow system.

THE MANUFACTURE *of* SAND-LIME BRICK

A PAPER thus entitled, written by Warren E. Emley, has just been issued by the Bureau of Standards of the U. S. Department of Commerce which is the last word in the investigations and study made of this species of brick manufactured in the United States at the many more or less large plants now making sand-lime or so-called "silica" brick in this country.

Mr. Emley says in his introduction that the manufacture of this kind of brick has been put on a paying basis and that thereby a service has been rendered not only to the manufacturers, but to the public as well. Sand-lime brick success has been especially fortunate to those communities where brick clay is not obtainable.

In a few remarks on the history of the "silica" brick, Mr. Emley says that it was the patented process of Dr. Michealis in 1880 which made the first real sand-lime brick. A sand-lime brick said to have been made in New Jersey in 1860, he says, was really only a mortar brick of ordinary lime mortar molded and permitted to set. All sand-lime brick made in this country today, he says, follow the basic principles of the Michealis brick. The Michealis process in this country, he says, is free to anyone who cares to use it.

The first sand-lime brick plant in the United States was established at Michigan City, Ind., in 1901.

Most of the sand-lime brick sold is sold for common building brick and only about 6 per cent of the total is face brick.

The Sand-Lime Brick Association with its membership of about forty in the United States and Canada is responsible more than anything else for the commercial success achieved.

The paper defines and describes the brick very excellently and fully.

In selecting a site for the erection of a sand-lime brick plant, Mr. Emley says too much emphasis cannot be laid on the quality and cheapness of the sand. The average weight of a "silica" brick is five pounds and at least two tons of sand are required for every thousand brick made. The quality of the sand is most important insofar as the quality of the brick and therefore its selling price is concerned. Every difference in the quality of sand is worth consideration by the sand-lime brick manufacturer. Large grain sand is better than small grain sand. Reasonably clean sand is required. The impurities commonly present in sand are mica, feldspar and clay. Of these mica is the least objectionable, while feldspar is said to weaken the brick if found in too large quantities. Clay is not particularly injurious. It tends to weaken the brick but its effect can be neutralized by the addition of more lime.

Deposits of sand which are reasonably clean and free from pebbles and dry are ideal. If near a market these conditions are just right for the utilization of the deposit for sand-lime brick making. Where such deposits are found it is also often found to be true that they are frequently wet by rains. This difficulty can be easily overcome by keeping a week's supply stored under cover. Most of the processes used now do not require that the sand be even air dry.

The spawls, unsound blocks and other refuse of building sand stone quarrying can be crushed and utilized for sand-lime brick manufacturing instead of being hauled away and dumped.

QUALITY OF LIME IMPORTANT

Dealing with lime as an ingredient, Mr. Emley says that altho its proportion is small, its quality is of the utmost importance. It must be perfectly hydrated before the brick are pressed. If not, the brick will expand and strain and disrupt. The lime must be sufficiently caustic to enter into combination with the sand. The quality of commercial lime is determined by the impurities, their extent, and the temperature at which the lime has been burned.

The most important step in the manufacture of sand-lime brick is the mixing of the sand and lime. If this is done properly a good brick is produced and if not done properly, the result is a bad brick.

The mixing is followed by the pressing and upon this point Mr. Emley makes some very interesting observations. When a sand-lime brick leaves the press it is not subject to any more changes of shape and size and this uniformity feature is important as a marketing argument.

After pressing the brick are picked by hand and piled upon iron trucks. This requires tender care so that the brick will not crush in the hand. These trucks are run into hardening cylinders and there are hardened. From the cylinder the brick are run directly to the loading platforms and shipped. It is this rapidity of manufacture which has given rise to the statement that sand-lime brick are made last night and used this morning. When they leave the hardening cylinders they are gray and have a dead sound but on exposure to the air they become nearly white, dry, and develop a good ring. The coloring of sand-lime brick when desired, is done by mixing the necessary pigment during the brick mixing process.

Sand-lime brick are characterized by their remarkably straight edges and plane surfaces. Well made sand-lime brick, when broken will show a uniform texture. Sometimes pebbles are scattered thruout the brick and sometimes, too, minute white spots are noticed, which indicate imperfect hydration or insufficient mixing of the lime and sand. If these spots are very minute, then the danger is reduced to a minimum and negligible, but if they are of any great size, planes of weakness will be found in the brick which may be sufficient to injure the quality of the brick.

Upon the subject of tests, Mr. Emley says the purchaser of brick demands that the brick shall have a good appearance when laid in the wall and be able to resist successfully the action of the weather. Any brick which does these two things will be amply strong, he thinks, to stand any load which common engineering practice designs it to carry. As regards strength it is known that the strength of a brick wall or pier depends more upon workmanship and the quality of mortar than on the individual properties of the brick.

Ernest, a great ceramic expert in this country thoroly investigated the behavior of sand-lime brick when exposed to fire and the tests showed that up to 300 deg. Cent., the crushing strength of the sand-lime brick increased, due most probably to the drying out of the material. Further heating, it is observed by Mr. Emley, may result in the dehydration of the calcium silicate, thus weakening the bond. At the highest temperature, he says, a new silicate has probably been formed so that the material has been transformed into a substance similar to silica brick. Thruout the tests there were no signs of warping or shrinking, the bricks retaining constant volume. Several of the brick in the test cracked, however, and this was observed to have been caused by the presence of the white spots of lime before referred to. Other results very different have been obtained by other investigators conducting fire tests.

The paper is concluded with descriptions of various plants in the North and Middle West. The booklet is obtainable by request to the Bureau of Standards, Department of Commerce, Washington, D. C., by enclosing with the request, the sum of ten cents.

* * *

Optical Glass Problem Solved

How the United States has solved the optical glass problem was told at the monthly meeting of the Pittsburgh section of the American Chemical Society at the Mellon Institute, University of Pittsburgh, February 21. The speaker was A. E. Williams, of the United States Bureau of Standards.

The general supply of optical glass for the United States before the war came from three firms—one in France, one in Germany and the third in England. Germany had almost a monopoly on the optical glass trade in the United States. At the outbreak of the war practically all the product was commandeered for home use, and exports soon stopped. When the United States entered the war the demand for optical glass for the manufacture of field glasses, range finders and other instruments necessary in war, made it evident that the United States must develop an optical glass industry of its own.

Mr. Williams is a graduate of the department of ceramic engineering, University of Illinois. Since his graduation he has been actively engaged in various commercial plants and in conducting researches, principally at the University of Illinois, where he was an instructor in the department of ceramic engineering.

For the past two years Mr. Williams has been connected with the United States Bureau of Standards, where he has developed an optical glass laboratory and also a small plant capable of supplying a certain amount of the needs of the United States government for various uses. All of this work has been done at the Pittsburgh station of the United States Bureau of Standards.

* * *

Appointed to Industrial Peace Committee

Loyall A. Osborne of New York, vice-president of the Westinghouse Electric & Manufacturing Co., and chairman of the executive committee of the National Industrial Conference Board, has been appointed, by the Secretary of Labor, a member of a committee on industrial peace during the war.

This committee, which consists of five representatives of employers, five labor leaders, and two public men, will provide a definite labor program in order that there may be industrial peace during the war, thus preventing interruption of industrial production vital to the war.

A MECHANICAL TIME "CLERK" *for* EACH TRUCK DRIVER

The Value of a Motor Truck in the Clay Products Industry is Often Measured by Its Actual Running Time. By Using a Recorder Delays and Inefficiency Can be Eliminated

By S. V. Norton

Reprinted from "Factory"

WHAT happens when your motor truck goes out on the road? One need not have a fleet of trucks in order to be interested in this problem. The owner of one truck is as concerned with the difficulty as the owner of several.

Nobody knows except the driver, and he won't tell, what he does when he has turned the corner and disappeared on his morning trip. When the driver hits the high road do you know whether he is keeping his truck busy or not? The driver is human like the rest of us, and he is often sorely tempted.

Mechanical ingenuity comes to the aid of the factory manager in his perplexity, and shows him a way by which he can keep track of the movements of his truck almost as well as he could by sitting on its seat with the driver.

Devices have been perfected which can be attached to the truck and which make a record of the day's performance in minute detail. From this record, which appears on a chart, the owner can tell the time when the truck started out, when it stopped, how long each stop was, the length of trips, the speed, the time spent in loading and unloading, and so forth. This data, which is as complete as could be desired, and which takes precedence in its truthfulness over any human testimony, gives the owner at the end of each day the very facts which previously he could not know.

A western manufacturer who was doubtful as to the efficiency of his small fleet of six trucks, installed recording devices. Among other things, these devices brought to light the following interesting facts. Two of the trucks, which had routes on the west side of the city, were found to be idle about an hour and a half each day at the same time. An examination of the routes taken by these two trucks showed that they came rather close together at one point.

Acting upon this information, the concern found out that the two drivers met each day upon agreement, and spent the idle time playing pool. It was merely necessary for the superintendent to call this to the attention of the drivers and an hour and a half each for two trucks was saved to the company.

The time of the motor truck may be worth several dollars an hour. If it is figured that the truck which costs $20 to run is bringing in $40 a day, then it is proper to say that for every hour that the truck stands idle, the owner is suffering an absolute money loss of $5. In fact, there are not very many business men whose time is worth more than the time of a five-ton motor truck. The business man looks with concern upon anything that wastes five or ten minutes of his ime, but he often does not take the trouble to find out if the ime of his motor truck is being wasted.

The actual working of a recording device will be made clearer by the chart, shown at the bottom of page 272. This chart shows the day's work of a truck. At 8:45 the truck started on its morning trip, returning at 12:15. The afternoon trip began at 1:15 and lasted until 4:50, when the vehicle arrived at the garage. The chart shows two short moves between 4:50 p. m. and 5 p. m. occasioned by placing the truck for the night, while the fine line from 5 o'clock on is conclusive that it was not moved again before the charts were changed.

From the chart it is evident that it has been an unusually efficient day. The driver had only four stops of over five minutes in the morning, and but one in the afternoon, and he and the truck were in service over ten hours and a half.

But the truck stood idle for nearly two hours and a half in the morning, before it got away from the store. This time for loading is excessive, and at $1 an hour, the approximate cost of the service, this loss demands investigation and an improvement of shipping conditions.

SERVICE RECORDERS PREVENT SMALL LEAKS

The experience of another concern shows how the use of service recorders has reduced the small leaks which used to cost thousands of dollars a year. Here the motor trucks went directly from the garage in the morning to the freight station, instead of reporting first at the plant. This, of course, allowed a certain leeway to the truck driver, inasmuch as it removed the check which might otherwise have been kept by requiring the drivers to show up with their trucks at a specified time.

When recorders were put on the trucks, however, it was found that the drivers did not start out from the garage until 7:50. This might never have been detected, for the driver could easily plead a delay at the freight station. When the condition was brought to the attention of the garage superintendent, he reported that the clocks which operated the recorders were incorrect. However, a personal visit to the garage showed that the recorders were telling the truth, and that in fact several of the trucks did not start out until nearly 8 a. m.

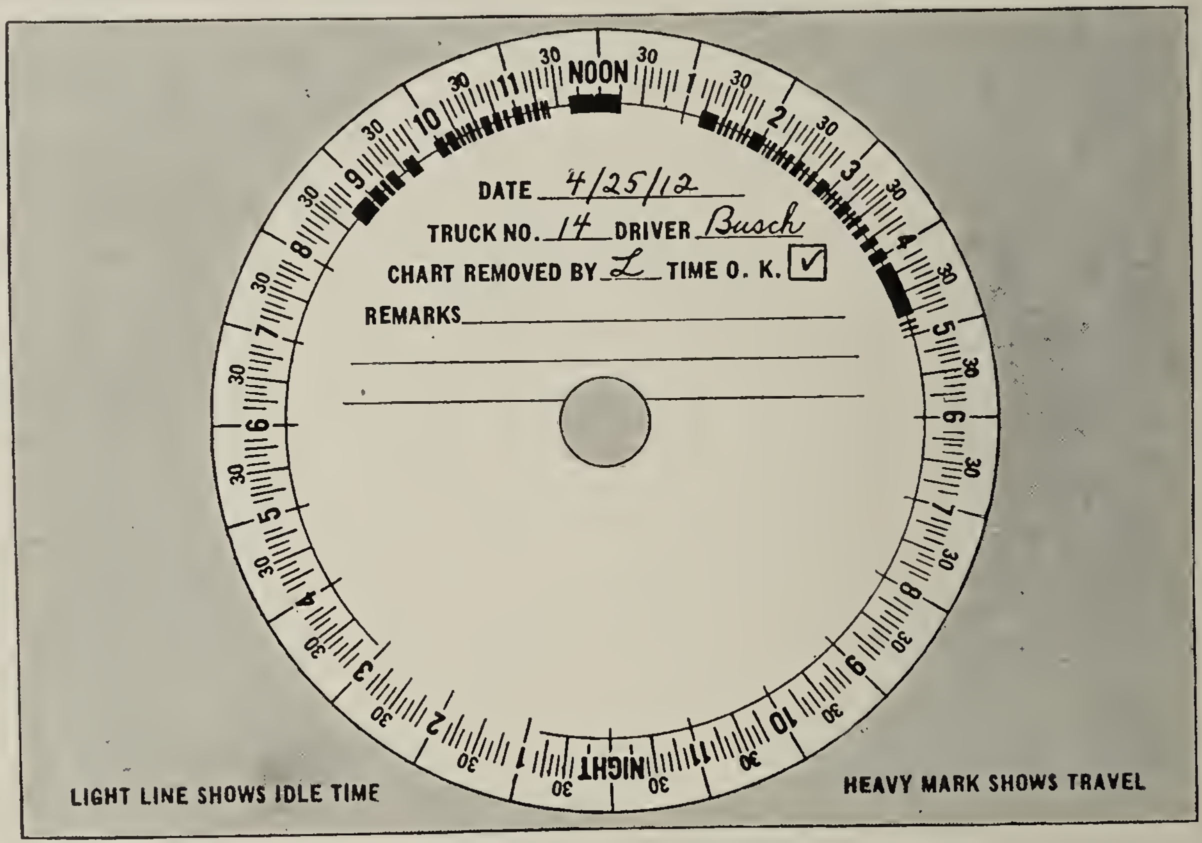
By far the most interesting result of this installation is the effect which it had in getting the drivers to take a real interest in keeping the trucks at work. Once they realized that their movements were known by the traffic superintendent almost as accurately as if he had been with them, and that every unusual delay would come to his attention and require a special explanation, the drivers saw to it that any case of delay was reported at once by telephoning as it occurred. Thus, if the truck was likely to be held up for an hour or two, the driver at once called the office, giving full particulars as to the trouble with which he had met.

HOW THE RECORDER FOUND A HIDDEN LOSS

Such devices, however, are not so much detectives as they are aids to the truck driver. One instance to prove it: The Western Packing Company of Chicago operated a truck which was supposed to deliver meat every morning at 9 o'clock to a certain store.

The storekeeper, however, complained that the truck was often late. The service recorder which was put on this truck showed that there was a wait of about half an hour, at about 9 o'clock. An investigation showed that the truck reported at the store at 9 o'clock, but that, owing to the crowded condition of the alley leading to the store platform, it was often 15 or 20 minutes before the driver could deliver his goods. The packing company and the storekeeper got together at once and corrected this condition. The recording device exonerated the driver, who had been under suspicion.

A manufacturer who kept close record of the running time of his trucks found that it was only 28 per cent of the total. He installed recorders, and a few weeks later the actual running time had risen to 33 per cent.



DATE 4/25/12
TRUCK NO. 14 DRIVER Busch
CHART REMOVED BY L TIME O. K. ☑
REMARKS

The Use of a Time Recorder on a Motor Truck of the Type Illustrated Here Helps In the Investigation of Delays and Brings About Better Methods of Operation.

A striking example of the manner in which such a recording device protects the owner against unfair charges is afforded by the experience of a Cleveland concern. One of its trucks, which was kept in a public garage, was found one morning to have a broken spring. It was supposed that the spring was broken toward the close of the previous day and had not been noticed by the driver or else was willfully overlooked when he put the truck up for the night. Inasmuch as it would be unsafe to operate the truck with a broken spring, instructions were given to have it repaired at the garage.

That evening, upon looking over the service recorder chart, the traffic superintendent noted that the truck had been used for about half an hour around 12 o'clock of the previous night. Obviously if the truck had come into the garage with a broken spring, as was alleged by the garage proprietor, it would have been impossible to have used it later on in the night. Without doubt someone in the garage had used the truck without authority, and had broken the spring.

On being charged with this the garage proprietor admitted that the truck was used about midnight to haul in a car which had broken down on the road. Thereupon, of course, the driver was entirely exonerated of any suspicion which may have rested upon him, and the owners were refunded the cost of repairing the spring.

THESE LITTLE LEAKS CAME TO LIGHT IN ONE CONCERN

An instance of the way in which a recording instrument enabled them to detect five different causes for delay is reported by a wholesale coal company. Undoubtedly leaks of a somewhat similar nature occur in the operation of your factory trucks.

After equipping his trucks, this owner analyzed them carefully not only to find what delays were occurring, but why. One chart is quite interesting.

In the first place the chart showed a steady running time of 15 minutes, which the superintendent knew from his route sheet indicated the return of the truck to the yard from its first trip of the day. The truck reached the yard at 8:15. There it stopped and did not move for 20 minutes. Here was a startling delay at the outset. What was the explanation?

The matter was investigated and the driver complained that the yardmaster had issued no order to him for the full 20 minutes that the truck was idle.

THE RECORDER SHOWED THE NEED OF BETTER METHODS OF OPERATION

This brought the investigation up to the yardmaster, who admitted that he might have been a little lax in handing the order to the driver, but he contended that he was only partially responsible for the delay, for he had held the order for only five minutes while attending to other matters, whereas it was fully 15 minutes after the truck had come into the yard before the order had been issued. The investigation proceeded to the other department where it was found that, partly due to an illogical system, and partly due to an inefficient clerk, orders were issued in a haphazard manner and without regard to the time schedule of the motor trucks. This was remedied, the clerk was reprimanded, arrangements were made whereby a copy of the schedule of truck movements was kept before the order department, the yardmaster was cautioned, and thus, the leak was closed up. But this was only one delay.

The recorder pointed to a delay of a different kind. After the driver had received his order, the chart shows that the truck traveled for about three minutes to the loading point for the kind of coal called for in the order. But having arrived at the loading point, there occurred a delay of 12 minutes. This was inexcusable, inasmuch as the yard was equipped with large overhead bins which delivered a load of coal through a chute in less than 30 seconds. The bin containing the coal called for had been allowed to run empty, and therefore it had become necessary to fill the truck by shovel from a pile. Steps were taken to prevent its recurrence.

Next there was a running time of two minutes, sufficient to take the truck to the scales for weighing. Another delay of six minutes then occurred on the platform scales.

It should not have taken six minutes to weigh a load of coal, so the investigation led directly to the door of the weighing clerk. His duties were somewhat intermittent, so he had been in the habit of leaving his post as long as 10 minutes at a time. He was advised as to the value of the time of a motor truck and, as an additional precaution, a gong was fixed on the scales shed by which the driver could summon the weigher if, in the future, he should be absent.

The chart now showed a running time of 15 minutes without a pause. Then occurred a short break, where the truck had stopped for four minutes. The owner knew that this was not due to the truck delivering a load, inasmuch as the driver had only one order and the delivery point could not possibly have been reached in less than 30 minutes. The driver admitted he talked with a friend.

The chart now shows that after this delay the truck proceeded on its way without pausing, and the next stop did not occur until the load was actually delivered. Here, occurred a delay of 15 minutes whereas it should not have taken more than five minutes to deliver the coal, as the truck was provided with a dump body. Delay number five was solved.

LARGE INCREASE IN TONNAGE HAULED

Had the truck owner merely felt that delays were occurring, he could have made only a general complaint. A mechanical recorder, whose testimony could not be questioned, informed him not only how much of the time his truck was standing idle, but the duration of each separate delay, and when it occurred. With this specific information, he was able to arrive at a solution which was always fair, square, and accurate. As a result of this system, he increased by 43 per cent tonnage hauled.

It is apparent that a recording device not only checks up the diligence of the driver, but, if properly followed up, may oftentimes lead to the discovery of leaks in entirely separate departments of the business. If properly explained there should be no opposition to the use of recorders on the part of the drivers. They really are a protection to the honest ones; the others are undesirable.

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Western Ontario Clayworkers Meet.

The annual convention of the Western Ontario Clay Workers' Association, held at London, Ontario, on March 1, was one of the most successful in the history of the association.

An important phase of the discussions was the need of greater food production in Canada, and the assistance which could be given in that direction by the clay products manufacturers. H. H. Hallatt, of Tilbury, one of the speakers at the afternoon session, called attention to a statement of Dr. J. W. Robertson of the food control board, that Ontario farmers must plant 1,000,000 acres more foodstuffs, or five acres more to the average farm, to meet the situation.

Mr. Hallatt pointed out that the same results in increased production of foodstuffs could be secured with much less labor by supplying proper drainage. His statement was indorsed by other delegates, some of whom declared that proper tile draining would actually double the present production of certain farm lands.

Mr. Hallatt added that the tile manufacturers had shown their good faith in the past by practically guaranteeing the farmers everything and taking chances on being paid from the increased crops of the first year.

Gilbert Armstrong, of Fletcher, cited similar experiences. The farmers had, however, been educated to the value of tile drainage, so that such guarantees were no longer necessary.

The important topic of securing an adequate provision of fuel and labor for tile and brick-making operations was brought up by Professor Scott, of the Ontario Agricultural College, Guelph, one of a delegation representing the Canadian National Clay Products' Association. The 150 ditching machines in Western Ontario could lay a million rods of tile in a season; and even if all the tile plants in Western Ontario were operated to capacity, they could scarcely meet half the requirements. In face of the demand for greater food production, 143 of the ditching machines were idle for want of drain tile, because of inability of the clay manufacturers to secure fuel and labor for manufacturing.

The association decided to make representations to the government with a view to securing provision for adequate fuel and labor for the industry, and President C. S. Parker, secretary-treasurer A. Wehlann, William McCready, of Lyons, and R. T. McDonald, of Brigden, were appointed to act in conjunction with committees representing the Canadian National Clay Products' Association and the United Farmers of Ontario.

The association elected the following officers for the ensuing year: President, C. S. Parker, London, Ont.; first vice-president, James Holmes, Alvinston; second vice-president, Gilbert Armstrong, Fletcher; secretary-treasurer, Alfred Wehlann; member of executive, William McCready, Lyons.

Votes of thanks were tendered William Clark, of Corunna, the retiring president, for his efficient services, and the London Builders' Exchange for the use of their rooms for the convention.

H. Hayman, president of the Builders' Exchange, entertained the members of the new executive and retiring executive at luncheon.

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Brickwork of 1740 Commended

Right in the heart of Wilmington there is now a razing project being prosecuted which gives material evidence to everybody who passes that brickmakers and bricklayers of 200 years ago knew their business, which no doubt impresses the observer with the fact that brick work properly done, with the right sort of brick, is hard to beat as a substantial building asset.

In 1740 there was erected on the outskirts of Wilmington, which is now the business center of the city, a little church building, about 50x75 feet, one story and attic, which was to become the first house of worship of the First Presbyterian Church of Wilmington. It was substantially built of salmon brick, with white mortar, according to the most approved colonial ideas of the time. It has stood intact until now—in use all the time—but will soon be a thing of the past, as far as that particular location is concerned, tho it is the intention that it shall rise again, being reproduced as nearly as possible, with the same material, in Brandywine Park, in another section of the city, where it can be preserved for all time.

The work of razing this building is no easy task, so substantial, even after all these years, is the brick masonry of 1740 proving itself to be.

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The annual meeting of the Builders' Exchange will be held in Cincinnati, Ohio, on March 13, when the Board of Directors and the Executive Board will be elected.

HANDLING COAL FIRES

A Brief Treatment of Various Types of Fireboxes, Their Advantages, and the Method of Firing Them

By Otto Springe, B. S. in Cr. E.
Purington Paving Brick Company,
Galesburg, Ill.

THE COST OF BURNING ceramic ware, altho comprising from 20 to 50 per cent. of the total cost of manufacture has until recent years been an item given only minor consideration by the industries.

Power plants thruout the country have long seen and taken advantage of scientific control of the fuel and its consumption under their boilers, but it has only been of late years that scientific study has been introduced and applied to the burning of ceramic ware.

FURNACES!

How and when to use the shovel and clinker bar in firing kilns is the main topic of this article. A brief treatment of various types of fireboxes is also given. The subject of the design and construction of kiln furnaces will be discussed in a comprehensive and interesting article from the pen of Carl B. Harrop, in the March 26 issue of **Brick and Clay Record.** It will be one of the most complete and authoritative articles ever published on this subject.

In the ceramic industries today the principal types of fire boxes or kiln furnaces in use on periodically fired kilns can be divided into two classes; (a) grate boxes and (b) dead bottom boxes. Class (a) can again be sub-divided under three heads, according to the kind of grates with which they are equipped: No. 1, flat shaking grates; No. 2, inclined grates, and No. 3, combination grates.

There are many advantages and disadvantages which can be sighted for and against each of the above types. The kind of kiln and the character of the ware to be burned are usually the controlling factors governing the selection of the furnace to be used, the next of importance being the quality of coal and the labor available.

In the white ware, terra cotta, and stone-ware industries where the round down draft kiln is the predominating type in use, the most favorable furnace seems to be the combination grate type. This furnace is equipped with a double set of grates, the top being inclined bars, and the lower a set of flat grate bars.

In these industries, due to their location, and the quality of ware manufactured, usually a fairly good grade of lump coal is available. The ware is of such nature that burning can be completed in four or five days, and with this object in view, the kilns are so constructed and equipped with furnaces capable of being forced to a maximum temperature in minimum time. The combination grate offers such facilities. Firing is done at regular intervals, the fires being thrown on the inclined grates, which might be termed a coking table for the flat grates underneath. When the fires are to be cleaned or clinkered on the top grates, the bed of fire and coke is let fall on the lower or flat grate bars, which already have a bed of fuel upon them and the inclined grates re-fired with a charge of green coal. The fires on the lower grate are cleaned three hours later. The chief advantage claimed for this type of grate being complete combustion of the coal and no decided drop in kiln temperature during time required to clean fires.

FLAT GRATE FURNACES

In furnaces of the second class under type (a) the grates are of the flat shaking variety, similar to boiler grates. There is usually a tendency on the part of the fireman to use too heavy a bed of fuel, which necessitates cooling the boxes before being able to clinker. In most cases where this type of box has been tried and pronounced a failure, the fault can be traced to **too long a time interval between fires,** compelling a rather heavy bed of coal to be carried upon the grates, thru which holes often burned, permitting an influx of excess air and causing a decided drop in kiln temperature. Of the three kinds of grate furnaces, the flat grate requires the most care and attention, this being especially true in cases where mine run coal of the clinkering variety is used as fuel. Coal of this variety will slag and cake upon the grate, often to such extent that shaking is impossible, and clinkering is only made possible by the use of slice bars, after which hooks are used to extract the clinker from between the grates.

INCLINED BAR GRATE

The third kind of grate, the inclined bar, seems to rank in popularity on about an equal footing with the dead bottom furnace. In the sewer pipe, tile and brick industries of to-day, these are the most numerous in use. The cost of construction of the two is about the same, and the lower grades of coal can be burned with the same results in either. Both boxes require less attention, and the cost of equipment and up-keep is lower than in the other two kinds of grate furnaces named.

Generally speaking, conditions governing the successful handling of one type can be applied with equal success to the other. The dead bottom kiln furnace seems in late years to have gained the foremost place in industries, using mine run coal of the hard clinkering variety as fuel.

The advantages claimed for it are low cost of construction and up-keep, the ease of manipulation not requiring long experienced firemen to operate, and the consumption of lower grades of coal. This makes the handling and firing of dead bottom boxes simpler than that of grate boxes, and on surface kilns another advantage is the position of the main body of fire, which is level with or lower than the kiln floor, making it possible to obtain harder and more uniform ware in the bottom of the kiln.

Firing should be conducted on a regular uniform schedule, which can best be determined for each individual clay by the application of pyrometers and gas analysis apparatus, thus determining the most advantageous temperature curve to follow, which curve after once being established is maintained by the regulation of the dampers governing the draft. The general tendency on the part of the fireman is to have too much coal in the furnace, causing clinkers to form quickly; which necessitates clinkering oftener with a greater loss of unburned coal each time.

FIRING PROCEDURE

Fires should be thrown every hour and boxes cleaned or clinkered three or four times a day, depending upon the coal used and the draft required. The amount of fuel thrown per fire is also a factor proportional to kiln draft. The higher the draft, the more coal required to hold the fires thru until the next firing period. The fire preceding the clinkering must necessarily be a heavier fire than the others, so that the boxes have enough fuel in them to form a natural arch of unburned coke to hold up the body of coal, while the clinkers are removed from underneath. Secondly, the boxes must contain enough fuel, so that after all clinker is removed and the remaining bed of fuel has been hooked to the front of the box, enough will remain in the box to form a bed for the charge of green fuel at the next firing period.

Clinkering is a Very Important Operation in Burning and Due to the Great Heat Which the Burner Is Subjected to During This Procedure He Is Quite Apt to Slight It.

The clinkering of the furnace is probably the most important part of successful kiln firing. Unless all clinkers and molten slag or gum are carefully removed at each operation, the furnace soon becomes hopelessly "growed" up, and so solidly sealed with clinker that the air supply becomes insufficient for complete combustion, rendering the furnace incapable of producing its required amount of heat.

After the burn in the kiln is completed, the kiln is sealed air tight, the boxes being banked with ashes to prevent the intake of cold air when the kiln is placed on the dryer fan. In cases where the heat is not drawn from the kiln to be utilized for drying purposes, the above step is unnecessary and the kiln is permitted to cool by its own stack draft.

FIRING LIGHT AND OFTEN

After the kiln is cold the fire boxes again must be cleaned of ashes and the cold clinkers removed, cold clinkering, referring to the removing of all clinkers adhering to the sides and flash wall of the box. Unless the clinkers are well hammered and removed after each burn, the molten slag will accumulate and form one solid mass which, if left in the furnace, renders same unfit for use.

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Appeals for Increased Industrial Efficiency

Crawford Vaughin, former premier of South Australia, addressed the convention of the Bricklayers', Masons' and Plasterers' International Union at Philadelphia, Pa., and thus appealed for increased industrial efficiency:

"The question now is whether we can produce not the men, but the wherewithal to enable them to crush the Hun. The man who is ministering to the wants of the nation now, no matter in what capacity, is doing his bit. We are facing the greatest offensive Germany has ever attempted and which they are able to deliver because of the failure of Russia's men to hold their task. I appeal to the workers of America to think of the need for reinforcements and materials with which to meet the offensive. We want no peace now, for the peace that could come under the conditions Germany would accept, would only allow for a newer and more bloody offensive campaign against the world within five or ten years."

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Forced to Turn Down Government Order

The Kutztown Brick Co., Kutztown, Pa., who purchased on May 10, 1917, the plant of W. F. Stemmel, turned out a million and a half of brick since then. This was the greatest amount of work ever accomplished at this plant. They have orders on hand, so that the plant will be kept busy thruout the year. However, owing to the shortage of coal and the severe winter weather conditions, operations had to be temporarily suspended. The manager, Mr. Bieber, was unable to sign a contract with the United States government to deliver a million and a half of brick before July 1, next, owing to the orders booked locally. Several small government orders, however, will be taken care off.

An extra emergency kiln was constructed last fall holding 250,000 brick and improvements are now being made to the dry house. A brick office building was erected, opposite the plant and a show room established. Mr. Bieber also represents the Hydraulic Press Co., of St. Louis, Mo., handling their entire line of fancy brick.

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Henry Mills & Son, 2075 Fulton Street, Brooklyn, N. Y., have been awarded a contract for the tile work in connection with the five new temporary hospital buildings being constructed by the United States Government in Brooklyn at a cost of approximately $300,000.

APPRAISAL
or INVENTORY—WHICH?

The Author Points Out How to Ascertain Plant Values and Gives Some Interesting Facts About Depreciation, the Co-Insurance Clause and Government Reports

By William F. Worcester

Secretary, Rau Appraisal Company, Milwaukee, Wis. Delivered Before the Iowa Clay Products Manufacturers Association, at its Des Moines Convention

FOUR ITEMS of great interest to the clay products manufacturers at the present time are: First, appraisals; second, insurance; third, cost systems and accountancy, and fourth, government reports. There have been many misunderstandings among plant owners concerning appraisal service. Concerns sometimes have the mistaken idea that having an appraisal made will be a great bother to them; that they will have to look up records, assist in the work, or that their operation will be interrupted. I wish to state that an appraisal is so systematized that the client is not annoyed in any way. If the client has any drawings or data concerning underground features, the same will be very acceptable but that is all that is necessary. The rest is up to the appraisal company. "But," you ask, "Don't we have to look up and tell you what the items originally cost?" Decidedly not. The appraisal company does not need to know this since any such figures would be of no value at the present time. Prices are undoubtedly different now and we secure our figures from authoritative sources, other than the plant owners, so that we know what the same property would cost today.

EVERY ARTICLE CLASSIFIED

To start in properly, I will compare the ordinary inventory of plants and equipment usually taken by owners, with an appraisal by a professional company in this line of work. Inventory is ordinarily a continuous listing of items—named but not adequately described. You do not realize the necessity for proper descriptions, sufficient to identify each item, unless you may have gone thru a fire and have experienced the searching questions of a fire insurance adjuster. On the other hand, an appraisal completely and thoroly describes every item of the permanent plant and not only that, but classifies, arranges, or indexes the items in such a manner that they are readily accessible. You can easily find any item that you may be looking for, in an appraisal.

TWO CLASSES OF APPRAISERS

Appraisers come under two classes in appraisal work, namely, architectural and mechanical. The first named measure and describe the buildings, make their drawings and field notes and write up a complete bill of materials, piece-bills of all labor and material which has entered into each building, kilns and other portions of the plant. They divide the descriptions at this time into insurable and exclusion values, the latter being the portions below the ground which would not burn and, therefore, may be omitted from the insurance coverage.

Mechanical appraisers list and describe every item of equipment in correct, standardized style, properly classified and arranged. Their listing of machinery, for instance, must check with the floor plans laid out by the architect, whereon every machine is numbered and located. The small items, too, are not neglected but receive just as particular attention as the large values. An appraisal omits nothing of the permanent plant.

PRICING OF ITEMS

It is often thought that pricing is done by the appraisers on the job. This is not true with any of the regularly recognized companies in this line of work. Practically all pricing is done in the main office. The descriptions taken by the appraisers must be perfect to such an extent that the items may be figured from authentic data by specialized experts who do nothing but pricing. Appraisers in an appraisal office are very seldom found in error because they have available the very latest catalogs, price lists and data procurable. On architectural pricing the office ascertains the building material and labor prices at the center nearest the plant appraised. On machinery the price is usually f. o. b. the shipping point of that apparatus, in addition to which the freight, cartage and installation is figured, to put the machine on the floor in running order. Pulleys and belting are listed and appraised in connection with each machine.

HOW DEPRECIATION IS FIGURED

The appraiser on the job places the depreciation in a preliminary percentage in his examination of the actual deterioration, wear and tear, condition and type being the main factors considered. The office checks this percentage in accordance with a method in use, whereby it is ascertained that the judgment of the appraiser is fair and reasonable. We protest against the "so much off each year" method in vogue on inventories personally prepared by owners. Age has but little to do with depreciation. It is merely incidental, as the owners may offset age by care and attention, maintenance and repairs. On the other hand, a comparatively new machine may be out of date because of some improved type, and age may not show enough depreciation in this instance. Usually, however, the age method cuts the valuation too low.

SUMMARY NEATLY PRESENTED

Following the above, the matter is typewritten and summarized—bringing the appraisal into a boiled down presentation, the certified recapitulation, the blue prints to scale, the cover and the supplement showing net depreciation and insurable values. These are all a portion of this many-sided work not understood or realized by the business man who has never had an appraisal made of his plant. Many times plant owners in the same line are called on to make an "appraisal" of a neighbor's plant. I asked one of them how he did it. "Oh, we went up there all right. Didn't have much time but we walked around, looked over what he had, made a few suggestions, cut down a few of his values and raised a few others and then signed a statement for him." The court called it an "appraisal." This kind of work bears no relation to a regular appraisal made by a certified company in this line.

Right here I want to say, however, that appraisal companies do not ordinarily appraise land, stock or supplies. If you want such values included it must be on the basis of a separate arrangement. For instance, we do not go into the question of clay deposits available, altho this is very important, without doubt. We do not examine the books or customers' reports. We don't count your money or ask to see your bank balance. Our work concerns only the itemized physical description and valuation of the plant. This is done in the same way as that of the insurance adjuster when he considers the values if you have a fire, so that you can arrange, distribute and place your insurance on a proper basis.

APPRAISAL AIDS INSURANCE ADJUSTMENT

This brings me to my second topic—that of insurance. Perhaps some of you do not carry insurance because you think you can't burn. I myself have looked at properties that have been destroyed by fire and have wondered how it was possible that they could have caught fire and, having started, how the flames could possibly have fed on that class of material. I tell you, an uninsured property is a dangerous proposition for the owners. Banks won't loan money on uninsured property, unless otherwise secured. A discharged workman might set fire to a property thru motives of revenge after carefully spilling gasoline to make sure of a good start and ultimate destruction. You never can tell what may happen. The careful management insures its property.

I find that most concerns have or are considering the co-insurance clause on their policies but do not fully understand the operation of it. Many call this the "80 per cent. clause" or ("90 per cent." as the case may be), without knowing the extent of its meaning and significance. Suppose your inventory, based on original cost, less a per cent. each year, may figure up in round numbers to $100,000 and you therefore place $80,000 insurance under an 80 per cent. clause. Suppose you have a $60,000 fire and you think you are fully covered on your loss. Then the adjusters arrive and it is ascertained that a true valuation would have been $150,000 on present prices. On this basis you should have placed $120,000 insurance with your 80 per cent. clause. On your $60,000 loss, therefore, they would pay $40,000 or two-thirds of the loss, all else being equal.

THE CO-INSURANCE CLAUSE

This sounds bad but there is no fault whatever with the co-insurance clause or reflection on the insurance companies. The fault is your own in not knowing the actual valuation of your plant. Right here is where an appraisal comes in good stead. Mr. Galvin, of the Rockford (Iowa) Brick & Tile Co., informed me that he found it necessary to increase their insurance $20,000 after they had an appraisal made, to cover up to the proper amount. The lesson is good; know the real value and then place the insurance right and you will have no trouble with co-insurance.

I am constantly asked a question something like this: "Suppose we carry our plant value at $75,000 costs, less annual depreciation. Suppose your appraisal were to show a real value of $100,000, then what should we do with the difference on our books?" The best auditing firms today are advising that a "reserve for depreciation" or "sinking fund" be set up on the books. Charge the difference to this reserve when you enter our valuation as plant account.

The next year, instead of deducting depreciation, charge reserve with the amount you ordinarily deduct leaving your plant account where it was, merely adding new values or deducting for items discarded. Then in two or three years, prices may drop again or you may have made changes. Have a revision of your old appraisal made, thus bringing the figures up to date. Once more you can straighten out your plant again, with the aid of your "reserve for depreciation," and start afresh on your valuations, also revamping your insurance at the same time.

APPRAISAL REVISION SIMPLE

An appraisal should be a part of the records in the office of every manufacturing establishment, and every five years or oftener should be rechecked by the appraisal company. Ordinarily it does not cost much for a revision unless you have made a great many changes. If the property is about the same in accordance with old descriptions, it merely means refiguring on replacement of values going over the depreciation again. We do not have to remeasure the same buildings or redescribe the same machines. It is a small job in comparison with new work.

We claim that the investment in a property is not the dollars it originally cost less the depreciation each year, but the investment is what the property is worth today. Suppose you purchased a plant for $75,000 cash five years ago; it depreciated at a certain rate per annum and at the end of five years it stood on your books at $50,000. This year you made, say $10,000 profits which you figure as 20 per cent. and are well satisfied. Suppose you had an appraisal made and found the property to be worth $100,000 on a fair physical valuation. Now your $10,000 profit is only a 10 per cent. return and this percentage does not look as good as the 20 per cent. above.

FIGURING TAXATION

The question of appraisals enters into the figuring of government taxation reports. Some concerns on a low book value of capital invested on high proportionate profits are going to find themselves in bad shape unless they secure a fair revaluation of their property. As yet there have been no rulings as to just how this is to be equitably adjusted, but it is quite the general opinion that revaluation of physical assets will be permitted because if it is not done the tax figured would work a severe hardship on many reputable concerns.

RECAPITULATION

Now to recapitulate the points which I have brought out in my talk: In the first place, I have demonstrated that your own personally prepared inventories are usually crude affairs at the best, but even were they as good as an appraisal, they would never carry the weight or inspire the confidence as does the disinterested certified report of an unbiased company engaged professionally in this work. I have illustrated how it is unsafe to carry insurance on your book values, especially with a co-insurance clause, and have shown the advantage of having a proof of loss ready in event of fire, to facilitate a quick and equitable adjustment. I have shown you the advantage of accountancy. The knowing of your real plant value gives you a proper basis upon which to properly figure your cost whereas under-valuation deceives you into false ideas as to profits. Lastly, I have called your attention to the dangers of under-valuation as concerning governmental reports. On the other hand, an appraisal made by trained and experienced men saves the time of yourself and employes at inventory time and provides an absolutely dependable plant valuation. The comparatively small sum this service costs is insignificant as compared with the benefit it may be to you in the time of emergency or even in the ordinary every day course of business.

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Brick Cheaper Than Lumber.

Because of the fact that lumber has advanced from 60 to 120 per cent. in New Orleans, La., while brick is not more than ten per cent. higher than it was before the war, a prominent architect of that city has prepared figures which show that a house which formerly cost about $4,000 in wood would cost today about $4,500 in brick and $5,000 in wood. The reason for this is not due entirely to the change in materials, but to the fact that when a material of which a building is to be constructed is changed, the entire building is modified, and brick admits more features of economy into the design.

New Orleans is the center of the biggest lumber industry in the United States and it is but natural that lumber was used as the principal building material, there being no clay manufacturing plant in the city. But this does not save it from the war-time lumber prices nor does it keep the minds of builders from turning to brick, the price of which has remained practically stationary.

With the adoption of brick, there will ensue many changes in the appearance of New Orleans' residential streets. Architects and owners will have greater scope than heretofore in planning and designing. New effects will be produced. The brick garden wall will no doubt again find favor.

Already plans have been made for several houses to be built entirely of brick and probably the first systematic start in the use of brick construction will be in the three new houses which are to be erected at Gentilly Terrace this spring by Baccich and DeMontluzin. In these houses the attempt has been made to demonstrate a new and home-like type of design, and the superiority of brick construction in saving of cost and future up-keep.

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RATE FUNDAMENTALS *and* TARIFF INTERPRETATION

This Concludes the Series of Seventeen Valuable Articles on Traffic Subjects Which Have Appeared in BRICK AND CLAY RECORD, Beginning With the July 3, 1917 Issue

By Sydney A. Hale

THE FACT that a charge is grossly unjust and unreasonable affords no excuse either to the shipper, carrier or the Commission for disregarding the application of lawfully published and established tariffs. The law plainly provides for but one method of getting rid of the unreasonableness or injustice of duly established rates and that is by their condemnation upon complaint and investigation. They can not lawfully be ignored without making the parties to such transaction incur the penalties of the law.——Old Dominion Copper Mining & Smelting Co. v. Pa. Rd., 17 I. C. C. 309.

CONFLICTS IN INTERPRETATION VS. UNFAIR CHARGES

In an interstate transportation system as complex as that in the United States, it is inevitable that tariffs develop conflicting provisions. While application to particular conditions may be difficult, the principles governing tariff interpretation are clear. The process is one of elimination working towards the rate that it is most specific in its application to the particular commodity offered for transportation. When that rate has been found, it must be applied regardless of the fact that, were it non-existent, a lower charge would be lawfully applicable.

It is important, therefore, to distinguish between those conflicts that may be cleared away by the application of technical rules of interpretation to the plain language of a tariff and those conflicts which compel the exaction of higher charges until the tariff has been lawfully canceled or amended. In the latter group falls the conflict between combination and thru rates discussed in the preceding article. Relief in such cases must come thru a change in such tariffs to conform to the standards set up by law.

CONFLICTS IN PUBLICATION OF CARLOAD MINIMA

The question of conflicts in carload minima is one largely subject to rules of interpretation. As it relates to conflict between minima under class and commodity rates it has already been covered. A joint thru rate carrying different minima for different portions of the haul has been condemned. The Commission holds that where two or more carriers publish a joint thru rate they must publish one carload minimum for the thru movement. This ruling is not to be construed as condemning the publication of joint tariffs and the use of rates made up in combination upon specific basing points, which provide one minimum to another beyond the base point.

In other words, if carriers publish a specific joint thru rate from A to C, the application of one minimum on a certain commodity from A to B and another from B to C would not be countenanced; if the tariff's named rates from A to B and provided that thru charges from A to points beyond B would be made in combination on B, it would not be unlawful to have one minimum apply from A to B and another from B to C, D, E and other points beyond. Where there is a joint thru rate and minimum in effect, transfer in route of the lading by the carrier to a larger or smaller car than that accepted by the shipper for loading will not affect the minimum charged; that lawfully applicable upon the car accepted by the consignor will be protected.

CONFLICT IN RATES AS TO POINT OF TIME

The conflicts that have been treated have all related to provisions contemporaneously in effect. There remains for brief consideration conflict between rates in point of time. The general rule is that a rate must be published and filed with the commission 30 days before it becomes effective. Without special permission from the commission changes can not be made upon less than that notice. Moreover, a rate once lawfully published remains in effect until lawfully cancelled. The chief difficulties that arise are in connection with accessorial rates and changes in factors of combination rates.

With the broader question, actual time is the controlling element. Thus a tariff may lawfully take effect on Sunday. Where freight is received by the carriers and bills of lading issued, the rates applied will be those in effect at the time of the actual receipt of the goods; the fact that actual carriage may not have commenced until after that date and subsequent to a rate change not in effect at the time of receipt will not alter the situation. It follows, therefore, that misdating of a bill of lading can not be permitted to defeat the application of the proper rates, altho it might make the parties responsible liable to criminal prosecution for an attempt to defeat the lawfully published charges.

The difficulties attending accessorial and combination rates are all resolved by the application of this principle of controlling time. A combination rate must be treated as a unit and the rate applied that in effect at the time of original shipment. For example, a shipment might be accepted April 1, 1917, for movement from A to D upon a thru rate made up in combination upon B and C. Subsequent to April 1st, but prior to the arrival of the shipment at D, the rate from A to B, and B to C, or from C to D may have been lawfully advanced or reduced. Such change will have no effect upon that particular shipment, which will be controlled by the charges lawfully in effect April 1st.

The same rule holds good upon transit movements. Thus a carload of wheat might be shipped from a country elevator in North Dakota to Minneapolis under a tariff that permitted milling in transit and shipment of flour out to the seaboard within six months under a thru rate from North Dakota to New York. The fact that that arrangement is cancelled subsequent to the receipt of the grain at Minneapolis would not deprive that particular shipment of the privilege of transit milling under a thru rate as long as the shipment was billed out of the mill within six months after receipt and in other ways conformed to the tariff in effect at the time the shipment started from the Dakota elevator. Nor can the cancellation of an absorption privilege, such as absorption of switching charges, invalidate claims lawfully accruing prior to such cancellation.

The transit rule works both ways. A change in tariff can not deprive a shipment entitled to such privilege of such benefit; neither can a change entitle a shipment that was not subject to transit at the time of its original movement to such benefit. Transit privileges may not be given a retro-active effect.

Rules governing demurrage and storage in transit are controlled by the tariff in effect when the initial movement begins. Demurrage upon outbound shipments is controlled by the tariff in effect when the car is actually set for loading. Demurrage or track storage charges at destination are governed by the tariffs in effect when the car is actually or constructively set for unloading, while off track storage by the carrier at destination is subject to the rates and regulations in effect at the time when such storage begins. It follows that, if a car arrives at destination July 2nd and the rates are changed July 3rd, the rates in effect July 2nd would apply altho the car might not be unloaded until July 8th.

(FINIS)

Deliverance from Plague

This is the subject of a very attractive booklet issued by the Blackmer & Post Pipe Co., St. Louis, Mo., manufacturers of vitrified clay products, of which concern L. R. Blackmer is president.

Page one of this handsome and profusely illustrated booklet is descriptive of the two-color cover design, which pictures a Mohammedan in the attitude of supplication to Allah. We quote therefrom:

"The Oriental grovelling in the dust prays Allah to deliver him from plague. His Occidental brother, takes that same dust, purges it by fire and of it fashions vitrified sanitary sewer pipe—civilization's deliverance from plague."

The following pages of the booklet illustrate and describe the various sizes and dimensions of vitrified sewer pipe manufactured by the Blackmer & Post Pipe Co., who make a specialty of large sizes—27, 28, 30, 33, 36, 39, and 42-inch pipe—giving specifications for same, as well as suggestions about trenching and laying the pipe. Tables showing the carrying capacities of the various sizes of pipe are also given and all products of the Blackmer & Post Pipe Co., are described and illustrated.

The Blackmer & Post Pipe Co. will undoubtedly be glad to send a copy of this handsome booklet to any of *Brick and Clay Record's* readers who are interested in its contents.

Face Brick Production in Ohio

A report covering twelve large face brick plants in the buff, flash and gray sections in Ohio shows that during the month of January there were slightly less than 500,000 brick manufactured. Normal capacity of the plants for the same month should have been in the neighborhood of 12,000,000 brick. Thus is seen the effect of the curtailed transportation facilities and other difficulties, on the manufacturing end of the business.

MINERAL COMPOSITION *of* REFRACTORY SILICA BRICK

Being a Discussion of the Properties and Manufacture of Silica Brick, and a Diagnosis of the Cause for Spalling

By J. S. McDowell

of the Harbison-Walker Refractories Company. Presented before Section D of the American Association for the Advancement of Science, Dec. 29, 1917

MANY PYROMETALLURGICAL OPERATIONS and other processes employing high temperatures are very largely dependent upon the availability of suitable refractories for the degree of their commercial perfection. Some of these processes, necessarily accompanied by difficult conditions imposed upon the furnaces in which the operations are carried on are limited by the properties of the commercial refractories. While no one refractory possesses all of the most desirable properties, the combination of a number of the properties in certain refractories render them nicely adapted to particular conditions.

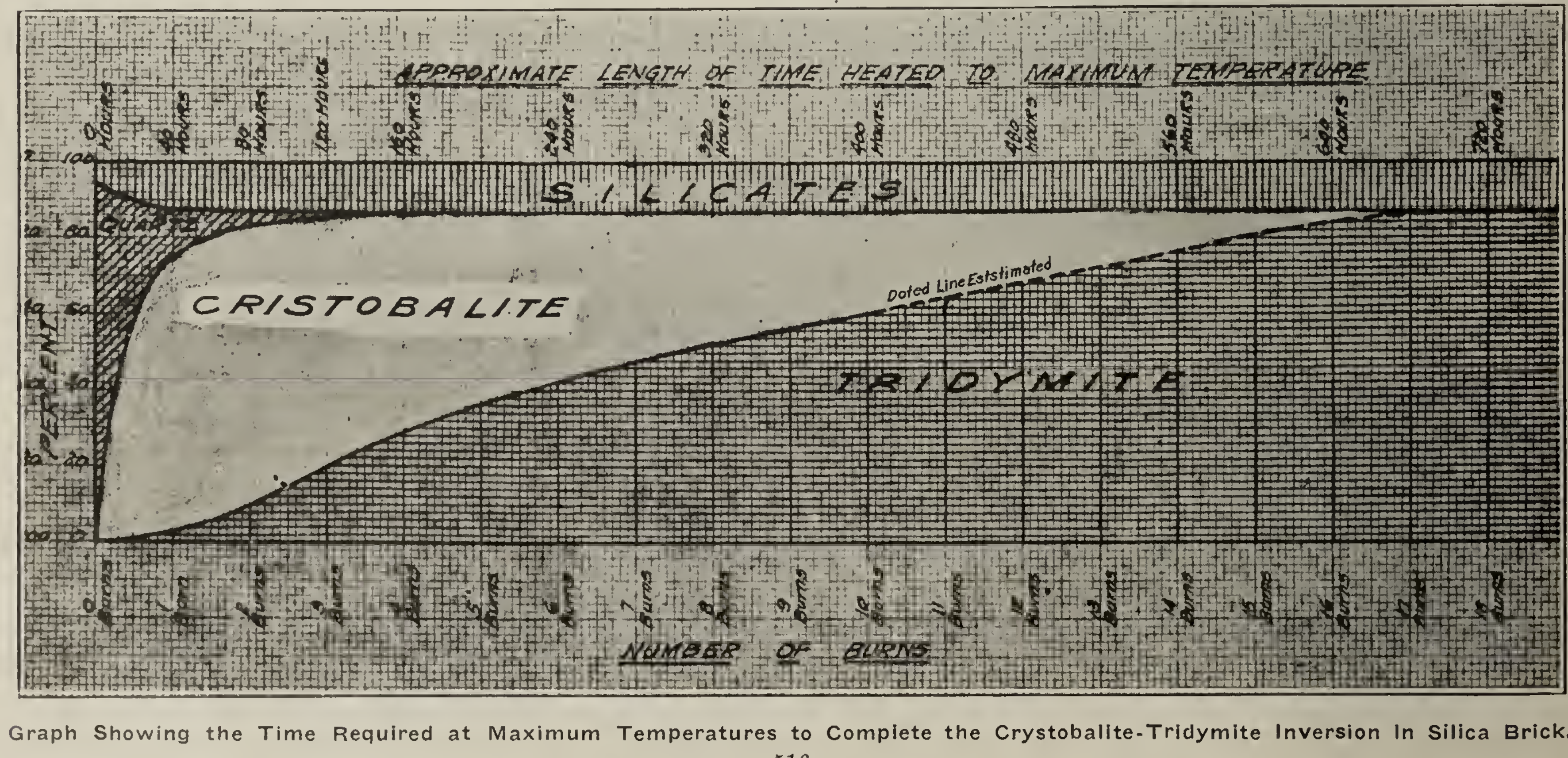
Silica brick with its high softening point, good resistance to abrasion, ability to sustain loads at high temperature, thermal conductivity and definite thermal expansion has played an extremely important role in the development of a number of industrial practices. With the advent of the use of silica brick in the by-product coke oven, the time required for cooking has been reduced by from 25 to 40 per cent. and as well as many other important improvements effected. For roofs of metallurgical reverberatory furnaces, glass tanks, etc., silica brick are now considered indispensable. Some of the other more or less important applications of silica brick are as linings and roofs for electric furnaces, lime kiln linings and as muffles in various types of kilns and furnaces.

PROPERTIES OF SILICA BRICK

Among other properties of silica brick, important as bearing on their use in practice is its high softening point. Unlike some of the other refractories employed on a large scale, as fire clay and magnesia brick, silica brick softens at a temperature not far from its fusion point. A high clay fire brick may soften to such an extent at 1,300 deg. to 1,400 deg. Cent. that it will begin to contract under a pressure of 50 pounds per square inch while its ultimate fusion point nearly approaches that of pure kaolin, i. e. 1,755 deg. Cent. Silica brick on the other hand with its apparent fusion point placed at about 1,725 deg. by a number of authorities will sustain a load in excess of 50 pounds per square inch at 1,500 deg. Cent.

Because of its close texture, hardness and high softening point silica brick is highly resistant to abrasion at working temperatures.

The thermal conductivity of silica brick as shown by the results of Dudley's investigations is approximately 25 per cent. greater than that of a good grade of fire brick. In the following table the coefficient of conductivity "K" as found by Dudley represents the flow of heat in calories per



Graph Showing the Time Required at Maximum Temperatures to Complete the Crystobalite-Tridymite Inversion In Silica Brick.

second per square cm. area, thru 1 cm. thickness for a temperature difference of 1 deg. Cent.

	Conductivity Temperature t. and t2.	Mean K between t. and t2.
Silica Brick	0 - 100	0.0021
	0 - 1000	0.0031
Clay Brick (First Quality)	0 - 100	0.0016
	0 - 1000	0.0025

MANUFACTURE

A very brief outline of the process of manufacture of silica brick will have direct bearing on the consideration of some of its properties.

Quartzite rock commonly termed "Ganister" is crushed to 2 in. size and smaller and ground in a wet pan to the degree of fineness suitable for the particular sizes and shapes to be made. As the grinding proceeds 2 per cent. of hydrated lime with water is added. Molding follows after which the brick are dried on rack cars in waste heat tunnels at a temperature of from 100 deg. to 150 deg. Cent. The thoroly dried brick are then burned, usually in circular down draft kilns.

In the process of burning the brick undergo an expansion from the "green" or unburned size. The major portion of this expansion is permanent and is due to the inversion of the quartz to other silica minerals, which inversions are accompanied by increases in volume. It is essential that the permanent expansion be attained to the fullest extent so that there will be no additional permanent expansion of the brick after being put into service.

Aside from the permanent expansion silica brick expand in accordance with the true thermal expansions of its constituent minerals. This temporary or true thermal expanssion altho different for all the minerals cristobalite, tridymite, and quartz and the silicates, occurs largely over a narrow range of temperatures.

SPALLING TENDENCY

To this expansion is attributed the spalling tendency of silica brick, a property which if possible of elimination would improve the service secured from them in some cases and would also probably widen the scope of their application.

Fenner in America and Le Chatelier in France first made exhaustive studies of the stability relations of the silica minerals.

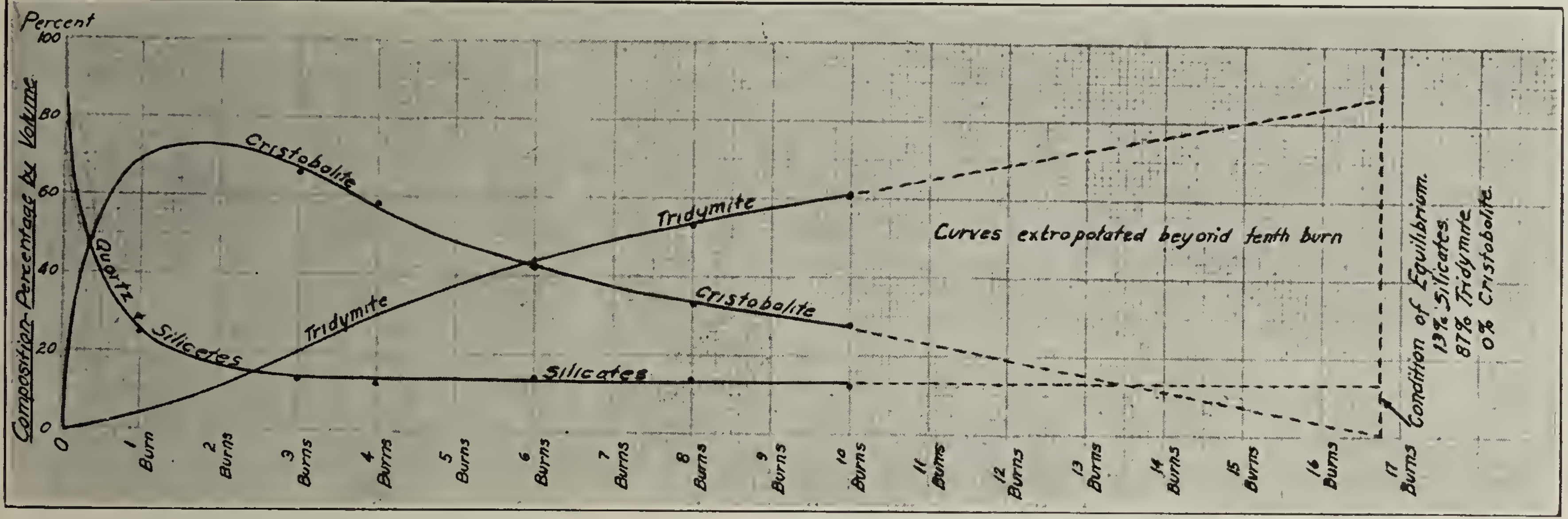
Seaver applied the knowledge secured from these investigations and made further studies as to their influences on the spalling tendency of commercial silica brick. These studies were continued in the work "A Study of the Silica Refractories," by McDowell in which an investigation was made of the mineral composition of silica brick burned successively one to six times in the regular commercial manner.

An additional microscopic study has been made of the constitution of silica brick, manufactured from Medina quartzite from Huntingdon County, Pa., one of which had been subjected to eight and the other to ten successive burnings in a silica brick-kiln. The results, expressed in volume per cent., are as follows:

Mineral	Number of Burns 8	10
Silicates	14	11
Cristobalite	33	28
Tridymite	53	61

These figures, combined with those of a previous work* are shown graphically in figures 1 and 2.

The percentage of "quartz plus silicates" reaches an approximately constant value of about 13 per cent. upon the third burn. It, therefore, can be assumed that at this stage no residual quartz remains in the brick, and that the 13 per cent. of highly refractory material, not separated from the quartz in the microscopic analysis, represents various silicates formed by combination of quartz with lime and with the original impurities in the rock. Upon completion of the cristobalite-tridymite inversion, the ultimate composition of the brick should be about 87 per cent. tridymite, 13 per cent. silicates.



Curves Showing the Gradual Transformation with each Successive Burn of the Constituents of Silica Brick into Thirteen Per Cent. Silicates and Eighty-Seven Per Cent. Tridymite.

After the fourth burn the inversion velocity decreases considerably, and brick burned ten times still contain 28 per cent. cristobalite. The form of the curve indicates that 16 to 17 burns would be required to reach a condition of equilibrium with all the crystobalite transformed to tridymite This is equivalent to a single long-continued burning in which the maximum temperature is maintained for a period of approximately four weeks. Advantageous as an all-tridymite brick probably would be, its production is not to be considered commercially on account of the great expense.

METHODS OF PRODUCING TRIDYMITE

In the attempt to produce a tridymite brick two other lines of attack are open; first—determination of the most advantageous temperature of burning, upon which subject there is not available any considerable data, and second—a study of the effect of the micro-structure of the quartzite upon the velocity of the transformations.

It is not improbable that the brick of which the microscopic analyses are given here, were burned at a temperature not sufficiently high to secure the maximum inversion of cristobalite to tridymite. The brick were burned at an average of approximately 1,400 deg. Cent. as measured by Seger cones. Tridymite is not known to form above 1,470 deg. Cent., but doubtless forms most rapidly at a temperature not much lower, say 1,420 deg. 1,440 deg. Cent. A microscopic study of brick subjected to long continued or to repeated burning at this temperature would be of decided interest.

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*See Page 2039, "A Study of the Silica Refractories."

The following is a microscopic analysis of the constitution of silica brick made from a Western Quartzite:

Quartz plus silicates	67%
Cristobalite	27%
Tridymite	6%

There is a noticeable difference between the mineral constitution of silica brick made from the Western rock and that of the brick from the Medina quartzite. The analysis of the latter is shown below:

Quartz plus silicates	25%
Cristobalite	71%
Tridymite	4%

On the basis of the above figures, 75 per cent. of the quartz of the Medina brick, during the first burning changes to cristobalite and tridymite, while only 33 per cent. of that in the Western brick undergoes this transformation. This difference is sufficient to warrant an inquiry into the underlying cause. Two hypotheses are tenable; the phenomenon might be explained by

(1) Differences in temperature and duration of burning, in grind, amount of lime added, etc.

(2) Differences in the chemical composition and texture of the rock used.

The first hypothesis may be dismissed as the conditions of manufacture of the two brick are essentially the same. Neither is there any material difference between the chemical compositions of the two rocks employed. It is probable that the explanation lies in the difference in texture of the quartzites. A number of measurements of the sizes of quartz grains indicate that the Western rock is of extremely coarse grain as compared with the Medina. This coarseness of texture possibly prevents the inversions taking place as rapidly as in the finer grained Medina rock.

AFFECT OF QUARTZITE TEXTURE

In this connection it is of interest to recall the investigations of Wernicke and Wildschrey† upon the texture of quartzites most suitable for silica brick making. They reach the conclusion, after extensive microscopic studies, that typical quartzites, consisting of intergrown quartz grains fairly uniform in size are not suited for the manufacture of silica brick due to the fact that brick made therefrom crack (or spall) too rapidly and attain their expansion too slowly. The good quartzites according to these authorities consist of quartz grains, mostly rounded in a ground mass or cement of amorphous silica or cryptocrystalline quartz; these expand without cracking or spalling and acquire nearly their whole expansion on the first burn.

While the statement that the typical quartzites do not make good brick is too sweeping, it is probable that the finer grained the quartzite the more rapidly will the inversions take place on burning. It does not seem unreasonable to believe that the inversion to tridymite would be more nearly complete on the first burn in a quartzite such as that described, in which small quartz grains occur in a cement of amorphous silica; and that therefore, silica brick made of such rock should acquire nearly their whole expansion on the first burn and present lesser difficulties on account of spalling.

All things considered, the selection of rock of the proper texture appears to offer greater possibilities for the production of a tridymite brick than any material alteration in the process of manufacture, such as time and temperature of burning. Spalling tendency is somewhat conditioned by the texture of the brick itself. Thus a brick of coarse grind spalls less than one of finer grind as is shown by results of tests by Nesbitt and Bell, but too coarse a grind badly affects some of the more desirable properties. There are often wide variations in the texture of quartzites of the same geological location, so that only averages of a goodly number of grain size measurements should be considered.

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†"Study of the Silica Refractories," page 2013.

* * *

Coal Storage Planned for Seventeenth Zone

Operators have planned, according to announcements made during the meeting of coal operators, state fuel heads and railroad representatives at Kansas City, Mo., that coal storage would be a feature of the coal business during the coming season in an effort to avert any repetition of a coal shortage in this district. Dealers will be enabled to take advantage of summer storage by a percentage decrease, going into effect early in the summer season and increasing as the season advances. The operators and railroads, long experienced in the storage of coals, have planned to increase this practice and are preparing to spread broadcast the knowledge of what coals will store without firing and when to lay the piles. Kansas City is the headquarters of the fuel producing zone number seventeen, which division was recently made by the government. An increased production of fifteen per cent. or of three million tons of coal must be had in this zone because of the conditions imposed by war and the need of the government, according to official statistics. Zone seventeen embraces Missouri, Kansas, Iowa, Nebraska, Oklahoma and Arkansas. If this increased production can be secured it means that steam coals produced in this territory will be ample to care for the needs of all manufacturing concerns. While the Illinois fields have been placed in a different zone, the government has announced that shipments of soft coal from the Illinois fields, greatly used in the manufacture of brick and clay products in this territory, will not be stopped without some warning being issued so that preparations can be made toward finding a supply of steam coal elsewhere to equal that of the present contribution from Illinois. This is vastly important to the manufacturers of clay products located to the west of the Mississippi River.

* * *

Increase in Domestic Pottery Production

A decided improvement is noticeable in the production of domestic pottery during the last few weeks, and for several reasons. First, there has been relief given in shipping, and over $1,000,000 worth of finished ware that had been already packed and held for shipment in the Eastern Ohio district, has been started forward, due to the lifting of embargoes. Second, the fuel situation has shown material improvement, due to the more moderating weather, and third, workmen are producing more. These factors combined have placed the pottery business in better shape than it has been for months. It is an open question whether or not the manufacturing potters of the United States will be able to take care of all the business that will be offered the trade this season. The back order files are pretty well filled with business, and the orders placed with all factories during the first six weeks of this year have been exceptionally heavy. In numerous instances it has been a case of buyers duplicating orders with plants in the hope that at least a part of their business would be shipped.

BUSINESS CLASSIFICATION *of* CURRENT LEGAL DECISIONS

It is the Purpose of This Department to Serve to the Manufacturer of Clay Products a Brief Digest of Decisions Which Have Been Handed Down in the Courts During the Month, Enabling Him to Keep in Close Touch With Legal Developments

MORTGAGE VALID

A mortgage to secure future advances is valid.—G. M. Carleton Bros. & Co. v. Bowen, 193 S. W. (Tex.) 732.

NOTE MUST ALSO BE DELIVERED

The "execution" of a note involves not only the signing but the delivery of the note.—Holmes Bros. v. McCall, 74 So. (Miss.) 786.

NO RIGHT OF PROPERTY

There is no right of property in a dead body in the ordinary commercial use of the term.—Finley v. Atlantic Transport Co., 115 N. E. (N. Y.) 715.

ATTORNEY AND CLIENT

The law requires the utmost good faith on the part of an attorney in his dealings with his client.—Svendsgaard v. Grimes, 162 N. W. (Minn.) 298.

SOLVENCY, INSOLVENCY AND BANKRUPTCY

The solvency or insolvency of a corporation petitioning for voluntary bankruptcy is not material.—In re United Grocery Co., 239 F. (U. S.) 1016.

STOCKHOLDER LIABLE

A creditor of an insolvent corporation can hold one liable as a stockholder who appears as such on its books.—Kirschler v. Wainwright, 100 A. (Pa.) 484.

VERBAL EVIDENCE WORTHLESS

The prohibition is absolute that parol evidence will not be received to prove any promise to pay the debt of a third person.—Guillot v. Guillot 74 So. (La.) 702.

CEREMONY FOR DEED DELIVERY UNNECESSARY

No particular form of ceremony is necessary to constitute a good delivery of a deed.—German-American Nat. Bank of Lincoln v. Martin, 115 N. E. (Ill.) 721.

CANCELLING A CONTRACT

One party alone cannot make a valid cancellation of a contract of sale and thus escape performance, but the other must consent thereto.—Lonsdale Grain Co. v. Canton Milling Co., 193 S. W. (Mo.) 853.

WIFE MAY FURNISH MONEY

Tho a wife may not become a surety for her husband, she may pay his debts or give him money to use in his business, even tho she may have borrowed it.—Yeany v. Shannon, 100 A. (Pa.) 527.

PRINCIPAL CANNOT BE BOUND BY AGENT

When a special agent acts under a special and limited written authority he cannot bind his principal by any act in excess of his written authority.—Winkle v. Atlas Lumber Co., 162 N. W. (N. D.) 364.

PARTIAL PAYMENT OF LIQUIDATED CLAIM

The partial payment of a liquidated claim, altho accepted in full settlement, is not an accord and satisfaction where no consideration is shown therefor.—Clark v. Summerfield Co., 100 A. (R. I.) 499.

IN CASE OF DOUBT, TENDER ENOUGH

Where a man does not know exactly what sum is due, he must at his peril take care to tender enough, and a deficient tender gives him no rights.—California State Life Ins. Co. v. Elliott, 193 S. W. (Tex.) 1096.

PROMISSORY NOTE DOES NOT EXTINGUISH DEBT

The taking of a promissory note from a debtor or third party will not extinguish the debt and create a new obligation, unless received under an express agreement to that effect.—Clark v. Berlin Realty Co., 104 P. (Cal.) 333.

COMMITTING FRAUD THRU AGENT

A principal may commit a fraud thru his agent, and evidence of the part which the agent takes in perpetrating the fraud for the benefit of his principal is admissible against the principal.—Finch v. Hill, 92 S. E. (Ga.) 63.

SILENCE NOT CONSENT

The mere silence of an insurer, even with knowledge of loss, and failure to require insured to furnish proofs of loss within required time, will not constitute waiver thereof.—Ætna Ins. Co. v. Jones, 115 N. E. (Ind.) 697.

SUE FOR BREACH OF CONTRACT

Where goods are shipped but not delivered, the seller's remedy is not a suit for the price, but one for breach of implied contract to receive and accept. To maintain an action for the price the seller must show an actual acceptance of the goods.—Bixler v. Wright, 100 A. (Mo.) 467.

ACCORD AND SATISFACTION

"Accord and satisfaction" is where one accepts something tendered to him by another in fulfillment of the other's obligation to him, knowing that it is tendered in full to extinguish an unliquidated claim as to which there is an honest dispute. —Shanan v. Bayer Vehicle Co., 162 N. W. (Iowa) 221.

BALANCE MAY STILL BE OBTAINED

The general rule, subject to numerous exceptions, is that part payment of a past-due, liquidated, and undisputed debt, altho accepted as a full satisfaction, does not prevent recovery of the balance.—People for Use and Benefit of Zeeland Brick Company v. Fidelity & Deposit Co., 162 N. W. (Mich.) 338.

SELLER OF DEFECTIVE MACHINERY LIABLE

The seller of defective machinery is liable for both direct and consequential damages; the latter being such as were reasonably within the contemplation of the parties in making the contract as a probable result of the breach.—Hope Engineering and Supply Co. v. D. N. Lightfoot & Sons, 193 S. W. (Mo.) 624.

NEGLIGENCE NO DEFENSE

The general liability of a surety upon a note, account, or bond, is not conditioned upon the exercise of diligence by the holder of the obligation to collect of the principal, and the negligence or passive inactivity of the holder is not a defense available to the surety.—Union Mut. Ins. Co. v. Page, 164 P. (Okla.) 116.

FAILURE TO RECORD REMOVAL RENDERS POLICY VOID

The removal by the insured of a considerable portion of the stock of merchandise covered by the policy of fire insurance, to another place of business, conducted by him, and his failure to have the transaction entered in due course on his books of account, will render the policy null and void.—Governale v. Interstate Fire Ins. Co., 74 So. (La.) 791.

BUYER MAY REFUSE FURTHER SHIPMENTS

The buyer of goods for delivery in installments, who received a part of the installments, may, by giving notice, revoke the order for future installments because goods delivered failed to comply with the contract, tho the goods subsequently tendered are of the quality contracted for.—Lindsborg Milling & Elevator Co. v. Danzero, 193 S. W. (Mo.) 606.

OVERDRAFT IS PROMISE TO PAY

An "overdraft" by a depositor of a bank is in the nature of a loan made at the request of the depositor, and implies a promise to pay; and no allegation of a promise to pay is necessary in a complaint upon a overdraft due to the issuance of a New York draft which exceeded the balance in a depositor's account.—Becker v. Fuller, 164 N. Y. S. 495.

BANK MAY SET OFF DEPOSITS

It is permissible for a bank, under proper conditions, to set off the amount of deposits against the depositor's indebtedness to it, even before a petition in bankruptcy is filed; it not being necessary to await an order of the court, tho such set-off may thereafter become subject to review and control by the court.—Fourth Nat. Bank of Wichita, Kans., v. Smith, 240 F. (U. S.) 19.

"SALES TALK" NO WARRANTY

Mere words of commendation, puffing, or "dealer's talk," which do not amount to an express statement of facts as to the kind, character, or description of goods, do not constitute an express warranty, so that a sale of cheese of "excellent" quality implies no special warranty, and the purchaser must rely upon his implied warranty that the goods are merchantable.—Maggiores v. Edson Bros., 104 N. Y. S. 377.

WARRANTY DEED MAY BE MORTGAGE

An instrument in the form of an ordinary warranty deed may be shown to be in effect a mortgage, by oral evidence that it was intended as security for debts owing by the grantor to the grantee and to other persons, and may be enforced as such at the instance of any of the beneficiaries. The statute forbidding the creation by parol of express trusts concerning lands does not apply to such a situation.—Ridgewood v. Leeper, 164 P. (Kans.) 173.

DEED NOT DEFEATED BY RECOVERY FROM MAIL

The fact that the grantor had power to recall a deed from the mail in which he had placed it, addressed to the grantee, and thereby prevent its physical delivery to her, does not prevent mailing the deed with intention to give it immediate effect from being a delivery. Where a deed had become effective by delivery, regaining possession thereof by the grantor, before it reached the possession of the grantee, would not defeat it.—Taylor v. Sanford, 193 S. W. (Tex.) 661.

"RENEWAL" AND "EXTENSION"

In general, a "renewal," as applied to promissory instruments, means a change of something old for something new. In general, the words "renewal" and "extension" apply to the particular debt and instruments between the same parties or their successors. The words "renewal" and "extension" are not words of art, having no legal or technical significance, and may mean whatever the parties intended when contracting.—Guie v. Byers, 164 P. (Wash.) 75.

PRIVILEGES OF BUYERS

Where an executory contract for the sale of goods, delivery to be made in the future, related to goods for which there was an available market at the time and place set for delivery, the law does not require the buyer, after the seller's renunciation, to purchase other goods, give replacing orders, or do anything to reduce his damages below the differences between contract price and market value at the time and place set for delivery.—Goldfarb v. Campe Corp., 164 N. Y. S. 583.

FRAUD MUST BE PROVED

Fraud in a conveyance by debtor must be proved, and not presumed, but fraud may be deduced from circumstances, not being susceptible of direct proof. Where the evidence as to the relationship of the parties, and circumstances surrounding them, and the unusual peculiarities of the transaction tends to induce reasonable minds to believe that fraud was the common object of the parties, the question of fraud was for the trier of the facts.—First Nat. Bank of Joplin v. Woelz, 193 S. W. (Mo.) 614.

* * *

American Clays Replace Foreign

The war has established the commercial independence of at least one American industry which formerly looked to Germany for its materials. A group of the country's leading makers of enameled ware kitchen utensils, of which $30,000,000 worth were purchased last year, principally by American housewives, announces that native materials in place of German imports have not only proved satisfactory, but have surpassed the German products in durability.

This achievement is the result of extraordinary analysis and investigation in the laboratories of some of the better known manufacturers in many different sections of the country.

Various clays which are used in the mixture of enameled coating for the steel shape of the kitchen utensil, presented the principal problems in meeting what seemed to be a war handicap. These were formerly imported from Germany and England and substitutes had not been considered possible before the war. Today, however, it is said that clays have been found in this country which are incomparably more effective than the foreign product. The especially noteworthy deposits have been found in sections of Kentucky, Tennessee and Florida. The native clays are proving somewhat less expensive than the German importation, altho this is one of the few of the industry's many materials whose price is now lower than before the war.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Fuel Cost for Burning Common Brick

Many brick manufacturers are confronted with the problem as to whether or not it is advisable with the present rise of costs of different fuels to change from coal to gas or oil, or vice versa. The following data was obtained from a manufacturer of common brick in Ohio who burns his brick in a clamp kiln. His kilns hold about 320 M brick and it requires on the average seventy-five tons of coal to obtain good burns. Figuring coal cost at $5.00 a ton it costs this manufacturer about $1.172 per M in fuel cost alone to burn his brick.

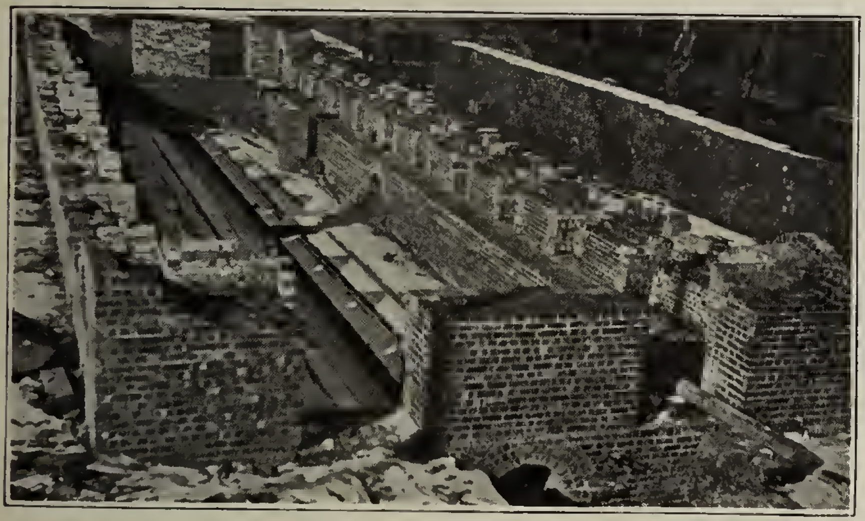
* * *

Points In Kiln Construction.

Many points on kiln construction have been given from time to time but kiln construction is ever a live subject and with this thought in mind, we shall present here a few fundamentals on kiln construction which have been culled from articles written by authorities on this subject.

One of the first fundamentals in connection with kiln construction is that of proper drainage. Much poor ware is due to damp bottoms. No matter how good the natural drainage is, put a net work of drain tile under and around each kiln, being sure the drains have a good slope. The best kiln on earth will not give good results if the bottom is wet.

A frequent mistake is to put a kiln on a shallow foundation. A foundation should always be carried, at least, to a point slightly below the deepest flue. Very few buildings of any type are subjected to the racking a kiln gets, yet it is a well established rule that the footings of even a small house are always carried at least a few inches below the basement floor level. If it is necessary to build a kiln on soft ground, the same rules should be observed as are followed when a brick building is constructed on similar land. In making calculations it should not be forgotten to add the weight of ware that is to be set in the kiln to the weight of the structure itself.



A View Showing a Rectangular Kiln Partially Constructed on the Plant of the Flint Brick Co., of Des Moines, Iowa.

There are three main points to be considered in designing a kiln bottom. They are: Equal distribution of the gases; good draft, especially in the watersmoking period; and ease of cleaning. The first gives good ware over the entire bottom, the second quick burns, and the third saves tearing up the floor and keeps the kiln in commission the maximum amount of time.

In actual practice it has been found that the deep main flue gives a distinct advantage during water smoking period, i. e., good draft and water settle. In kilns of this design there has never been the slightest sign of a water settle, even where the ware was set continually in a distinctly wet condition. This is probably due to the fact that dense, moisture-laden gases of the water-smoking period have a better opportunity of getting clear of the bottom courses than with shallow, small flues.

The Wall Construction and Part of the Fireboxes of this Kiln May Plainly be Seen in the Above Close-up View.

Referring to the construction of kiln bottoms, it is very bad practice to partially fill in the kiln excavation with earth, and then build the secondary flue walls or feathers on this filling. If this is done, it will necessitate a partial rebuilding of the kiln bottom, at least, within a short time. All filling should be done with hard burned brick or bats. If nothing else is used in the bottom and the masons are prevented from getting too generous with their mud, the original bottom will remain level for years. It is very good practice to allow the paving course to dip slightly toward the center of the kiln. This will allow the ware to lean away from the fires and in a measure will tend to overcome the pull on the outside courses.

Naturally there is no standard thickness for kiln walls, but there is a maximum limit to the thickness to which it is necessary to build them. There is very little reliable data on furnace construction in the clayworking industry but metallurgical and other industries have done

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Self Striking—Horizontal—for Common and Fire Brick

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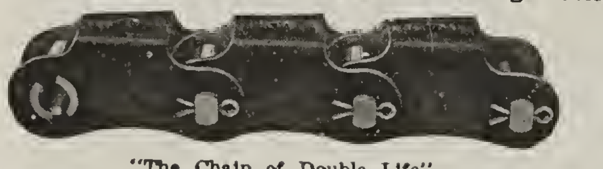

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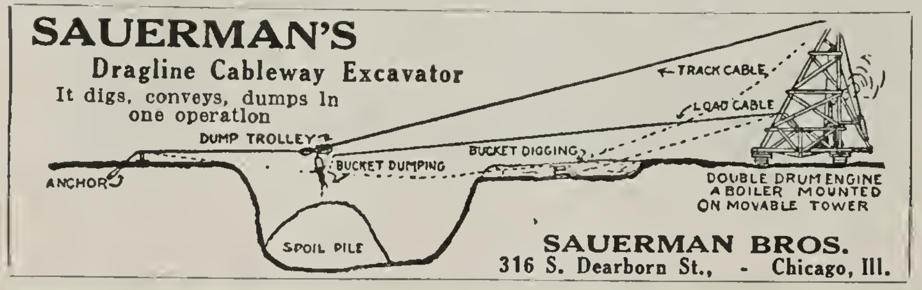

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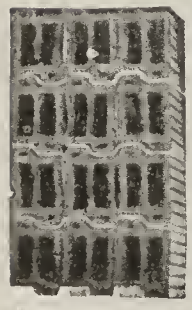
WEBSTER & KINCAID, 407 Greenwood Bldg., Cincinnati, O.

We carry a Complete Line of Clay Machinery



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602 Lincoln St. Coffeyville, Kas.

considerable investigating, especially in regard to the prevention of excessive radiation.

Three points must be kept in mind when constructing a kiln. They are: The wall should be of sufficient thickness to stand the strain; the wall should be of such construction as to reduce radiation to a minimum; and the wall must be thin enough to permit good firebox construction. A thick wall, while it reduces loss due to radiation, necessitates the construction of deep fireboxes which generally give trouble in concentration of heat, with a resultant burning out of the firebox arches. On the other hand, the thin wall, while it permits of good firebox design, allows excessive radiation to take place.

Considered from all angles, thin, straight walls are the best, if they can be insulated, since in this case the firebox is located inside the kiln and the fuel does not waste considerable of its energy in heating up and burning out the walls. The setting space lost by projecting the fireboxes into the chamber, while a considerable item, cannot be compared with the saving of time, fuel, and repairs during the life of the kilns.

The views illustrating this item are photographs taken of the kiln under construction at the plant of the Flint Brick Co., Des Moines, Iowa. They show the type of kiln that is being used on this plant for the burning of paving brick, and also indicate that proper care is being taken in the construction of the foundation.

⁂

Rusting Prevented by One Coat

It is commonly believed that a number of coats of paint form a better rust preventive for metal than a single layer does. The British Clayworker states, however, that according to experiments, this is not the case. Iron plates well cleaned and polished were coated, some with one coat and some with two, three or more coats of paint and then exposed to the action of steam for a day, after which the paint was removed and the plates were examined. The first was as bright as it was before exposure to steam, the second showed a few rust spots, the third was still more attacked, and the fourth entirely so. This result is due to the fact that the deeper layers dry badly and tend to dissolve the uppermost coating, increasing its porosity to air and moisture. It is, therefore, advisable to cover the plates with one coating only of paint or varnish, and to remove completely any old paint before doing so.

⁂

Your Boiler Plant Needs More Attention.

Most clay plant owners know but very little about power plant economics. This end of the plant very frequently is allowed to drag along on its own accord without much care being given to it. More attention should be exercised in the choice of equipment; in fact, it would be to the advantage of the operator if he would consult an impartial, competent engineer before making any installation whatever, rather than equipping with some standard apparatus just because other plants have it.

It is pointed out that by a more efficient operation, a reduction from ten to thirty per cent. in fuel consumption is possible; the installation of proper equipment will give about three times the amount of power from the same quantity of fuel; the proper investments made in the power plant will bring from 10 to 100 per cent. interest; and that to obtain the foregoing results, specialists on economical power plant operation and design should be consulted.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

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Personal

Henry Clements, the sewer pipe manufacturer at Cannelton, Ind., was a business visitor in Evansville, a few days ago.

O. M. Tupper, of the San Jose Brick Co., with offices in the Postal Telegraph Building, San Francisco, Cal., is on a business trip in the southern part of the state.

William P. West, formerly salesman for the Ironclay Brick Co., of Columbus, Ohio, has resigned to accept a position as automobile salesman with the Winders Motor Car Co.

J. M. Adams, secretary and general manager of the Ironclay Brick Co., Columbus, Ohio, has returned from an inspection trip to the company's plant at Shawnee, Ohio.

H. H. Camp, head of the Camp Conduit Co., Cleveland, Ohio, who has been in Florida for the last few months, is expected back about the latter part of March.

Donnelly Weaver of the Brick Sales Co., Cincinnati, Ohio, who had his automobile stolen some months ago, has been fortunate in getting it back. The machine had been sold twice after it was stolen.

Arthur Riggs and Donnelly Weaver of the Brick Sales Co., and Charles D. Alton of the Purcell-Grand Co., Cincinnati, Ohio, took part in a little drama held recently at the Methodist Church, Latonia, Ky., their home town.

Charles Harrison and LeRoy Gaddis, comprising the Gaddis-Harrison Brick Co., of Columbus, Ohio, visited the plant of the McArthur (Ohio) Brick Co., whose product they are agents for, recently.

Jno. M. Stoner, head of the Cincinnati (Ohio) Clay Products & Supply Co., was a visitor in Columbus recently, calling on the Hocking Valley Products Co., manufacturers of face brick, which concern is represented in Cincinnati by Mr. Stoner's company.

James T. Howington, general manager of the Coral Ridge Clay Products Co., Louisville, Ky., is back from a week's business trip to the East. Business with the company's local plant is extremely good, and operations are going forward at capacity on both brick and tile.

Daniel B. O'Brien, of Syracuse, N. Y., president of the O'Brien Construction Co., has been named a member of the Housing Committee to aid the government in the problem of housing industrial workers. The appointment is made by President G. C. Schreiber, of the New York State Association of Builders.

C. H. Patterson, who has been secretary of the Columbus (Ohio) Builders and Traders' Exchange for several months, has resigned to take up the secretaryship of one of the organizations affiliated with the Cleveland Builders Exchange. Mr. Patterson, who was well liked in Columbus and was recognized as an efficient secretary, will assume his new duties at once.

Experiment means to find out. It's good up to a certain point—and then it becomes waste. Some concerns like puttering about in the matter of making belt joints. The majority have adopted

CRESCENT BELT FASTENERS

as standard equipment. The story is interesting as a belting economy. Ask us.

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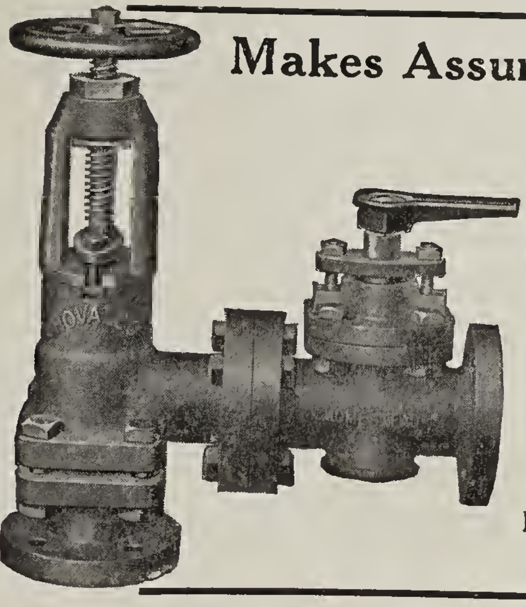

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The Homestead Quarter Turn Valve installed with the Hovalco Valve, as shown, is a combination that will act as an additional safeguard on your blowoff lines. If any leakage should develop in the angle valve, the Homestead can be closed while the other one is being repaired. Ask us all about this "money saving pair." Catalog L sent on request.

Homestead Valve Mfg. Co.
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Blasting without using the CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

Ask for names of users and Bulletin No. 4

The Sanderson-Cyclone Drill Co.
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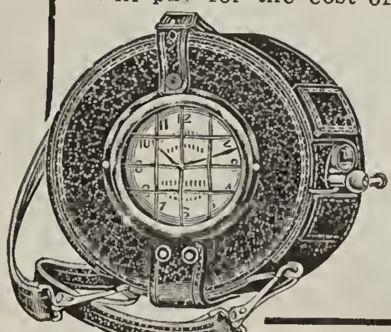
FIRE INSURANCE PREMIUMS

The Saving you will make by installing a

HARDINGE WATCHMAN'S CLOCK

will pay for the cost of the clock the very first year.



Thus—at no extra cost—you are protected against danger from the sleepy watchman, and each succeeding year you continue to save on your insurance.

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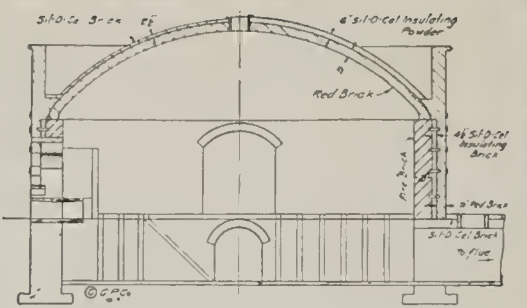
INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH

SIL-O-CEL
PREVENTS HEAT PENETRATION

INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

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NEW YORK 11 Broadway CHICAGO Monadnock Bldg PITTSBURGH Oliver Bldg LOS ANGELES Van Nuys Bldg SAN FRANCISCO Monadnock Bldg

RINO GEAR SHIELD

It will prevent wear on your gears and pinions; if it prevents wear, it eliminates frequent replacements; if gears are replaced less, there will be fewer "plant shutdowns"—and that means steady running and profit. You had better investigate Rino.

THE OHIO FILLER & SHIELD CO.
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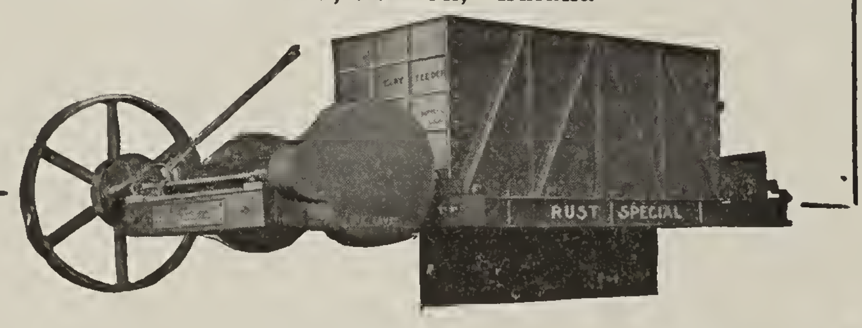
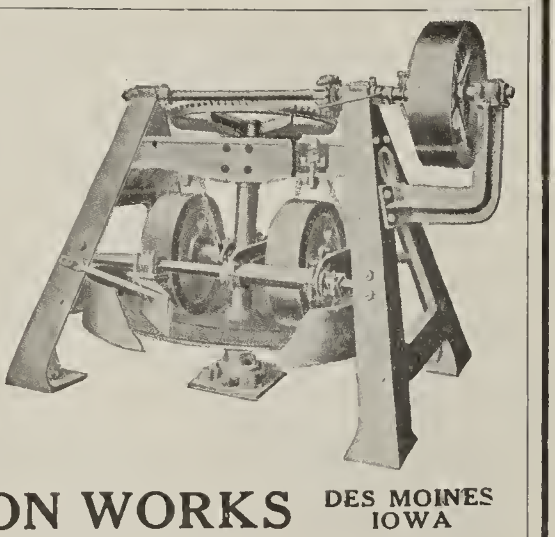
The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

H. C. Kleymeyer, general manager of the Standard Brick Manufacturing Co., Evansville, Ind., has returned from a business trip to Indianapolis. Mr. Kleymeyer states he looks for trade to gradually improve as spring advances and while he does not think the coming season will bring in as large a volume of trade as in many of the years gone by, he expects the brick manufacturers to be kept fairly busy.

H. H. Frazer, who has been sales manager of the R. B. Tyler Co., Louisville, Ky., for some three or four years, succeeding Donald McDonald, Jr., who resigned to become assistant superintendent of the B. F. Avery Plow Works, has resigned his position to become connected with the Philip Carey Co., of Cincinnati, dealers in roofings and building specialties. Mr. Frazer made an excellent showing in Louisville as a brick and supply man, and goes to the Carey company under protest.

California

The Board of Trustees of Alturas, Cal., have appointed a committee to investigate the area to be covered and the cost of a sewer system for the town.

Machinery for the brick and sewer pipe plant of N. Clark & Sons, at Alameda, Cal., has been ordered, and the work of rebuilding the works which burned down a few months ago will begin immediatly.

The improvement of Clipper street between Douglass and Diamond streets, by the construction of a seven-foot strip of vitrified brick pavement has been ordered by the Board of Public Works of Los Angeles, Cal.

After having been shut down for something like six years, the Carquinez Brick & Tile Co.'s plant at Eckley, Cal., is to be sold by foreclosure proceedings under a mortgage held by the American Trading Co. of San Francisco.

City Engineer Raab, Tracy, Cal., has submitted an outline to the Board of Trustees of a proposed extension of the sewer system. As this will require a bond issue, estimates of the cost will be submitted at the Board's next meeting.

Ray Burgess, manager of the Robinson Irrigation Pipe Factory, Gilroy, Cal., reports that owing to the past dry weather, they are busier than ever with the manufacture of clay pipe and are working over-time to accommodate those who have an urgent need for irrigation. Mr. Burgess reports many demands from the southern, as well as from the central, part of the state.

Frederick R. Turton, president of the Refractory Magnesite Co., is at present giving most of his time to his mine at Preston, Sonoma Co., Cal. He has recently installed several new pieces of machinery which will increase the output of the factory considerably. Recent tests made on his brick in the furnaces of the Selby Smelting Co. show that they hold up better than any brick which the smelting company has ever tested. The reputation of the Refractory Magnesite Co. is growing, the company having recently received several orders from the state of Washington.

The Pacific Sewer Pipe Co., the largest makers of sewer pipe in Southern California, have urged delay until the situation can be considered by the entire council, in the work on the twenty-eight sewer jobs in Los Angeles, Cal., claiming that the present specifications bar clay sewer pipe manufacturers from successful bidding and do not provide proper competition; while the Public Works committee of the City Council has recommended that the city proceed at once with the jobs, stating that the clay pipe interests have had sufficient time in which to submit their bids.

F. A. Costello, president of the California Paving Brick Co., San Francisco, reports that his company is experiencing its usual slump in the sewer pipe business. January's business was good, in fact, there was more than the factory could take care of, and all the unfinished jobs were completed in February. Mr. Costello says that he has no complaints to make against the hard rains California has been absorbing during the last month, because indirectly they are bound to increase his business, altho they are having their yearly direct effect upon present undertakings. The California Pottery Co., of which F. A. Costello is also president, is putting in a sewer system at King City, Monterey Co., Cal.

Pacific Coast brick and clay industries are slowly being affected by the McAdoo request that the people of the country discontinue all non-essential construction — all building which is not of an imperative nature. There was considerable work planned and under way before this request was made. This work is now in the finishing stage. Brick manufacturers do not know just exactly how to figure on this condition. Many of them feel that since the Pacific Coast is not affected by war conditions, these orders are unnecessary for this section of the country. The two Pacific Coast activities of most interest to the U. S. government are ship building and farming. Many argue that since there are thousands of tradesmen who can neither build ships nor farm, it would do no harm to allow building activities to seek their natural course during the war period as the government is not deprived of anything thru such a program. The labor shortage is not a serious one with manufacturers in the clay industry as the curtailment of many business projects is beginning to cause a surplus of unskilled labor. However, if business continues to shrink it will be necessary for brick companies to greatly decrease their output during the process of the war.

Connecticut

Jessie L. Davis, of Hampden, Conn.; Emma D. Burgess, Eliza G. Davis, William E. Davis and Harold M. Davis, all of New Haven, Conn., have incorporated as William E. Davis & Co., and will manufacture brick at Hampden, Conn. The corporation is capitalized at $90,000.

Delaware

A large two-story barn and stable of the Allen Brick Co., at Wilmington, Del., was burned on February 24. Horace S. Allen, the owner, estimates his loss at $2,500, with no insurance. The origin of the fire is not known. The blaze also destroyed a telephone trunk line, which cut eight towns adjacent to Wilmington out of telephone service for nearly 24 hours.

Illinois

The Peoria (Ill.) Brick & Tile Co., of which F. R. Carter is president, has increased its capital stock from $2,000 to $250,000.

Indiana

Brick contractors in Evansville, Ind., say they are fairly busy at this time and expect to be kept busy most of the season.

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Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

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We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.

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IN THE HEART OF THINGS

400 Baths
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Hotel Martinique
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Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

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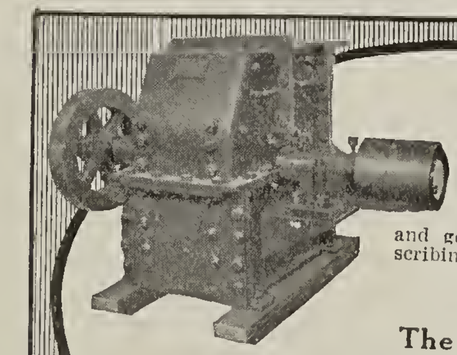
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If you don't get out your pencil and do some interesting figuring on power costs you can save, you'll be the exception.

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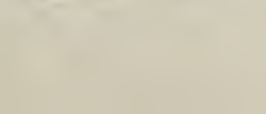

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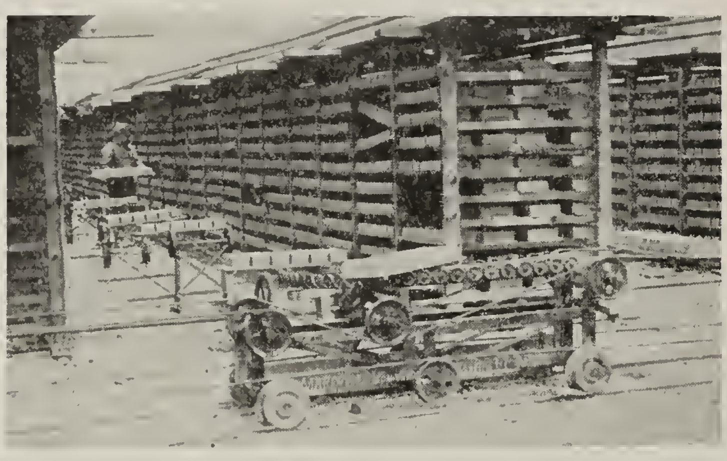
In Kiln or Dryer is essential to uniformity of product.

BRISTOL'S
Recording Pyrometers

Record the temperatures maintained. The accumulated knowledge secured by these records enable you to secure the maximum in production and quality. Write for Bulletin 205.

The Bristol Co., Waterbury, Conn., U. S. A.



The A-B-C of Cost Saving

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Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"

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MARINETTE, WIS. C. J. ANDERSON, Prop.

Pure Precipitated Carbonate of Barium

Highest Quality

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How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

The sewer pipe factory at Cannelton, Ind., was closed down several days recently while Frank Paulin, the manager, had a crew of men at work erecting two new smoke stacks.

Michael D. Helfrich, president of one of the leading pottery companies at Evansville, Ind., recently closed a deal for a large tract of timbered land in Lyon and Trigg counties, Indiana, for which he paid the sum of $100,000.

The Owen Coal & Clay Co. has been incorporated at Indianapolis, Ind., with a capital of $11,000, to mine coal, clay and other minerals. The directors are: James G. Haston, Harry Frey and John B. Givens.

The Fulton Avenue sewer in Evansville, Ind., one of the largest sewers in that city, was completed a few days ago. A great many brick were used in the construction of the sewer.

The Huntingburg (Ind.) Pressed Brick Works, made a shipment of 85,000 brick to Jeffersonville, Ind., a few days ago to be used in the building of the United States quartermaster's depot. This company has been doing a nice business during the past few months.

Brick manufacturers in southern Indiana will be active in the third Liberty Loan campaign that will start on April 6. H. C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Co., at Evansville, Ind., will serve on Liberty Loan committees as they did in the two previous campaigns.

It is expected that Mayor Benjamin Bosse, of Evansville, Ind., president of the Dixie Bee Line Association, will call a meeting of the vice-presidents and directors of the association in a short time. The proposed highway is to run from Danville, Ill., to Adams, Tenn., where it will connect with the Dixie highway. Some of the road has been constructed with brick.

Brick manufacturers at Evansville, Ind., and in many other cities in southern Indiana report that trade is looking up some and they expect a big improvement during the next few weeks. During the winter months many of the brick plants were closed and business lagged for several weeks. Building operations in Evansville are considerably better, however, with the coming of spring. A large brick addition of ten rooms and a basement will be built to the Claremont school. A new high school building that will cost in the neighborhood of $30,000, will be built at Lynnville, Ind. It will be constructed of pressed brick with stone trimmings. A grade school to cost about $15,000 will be built in Center township near Evansville, of pressed brick. Pressed brick will also be used in the construction of a new high school building at Carmi, Ill., a few miles west of Evansville that will cost about $40,000. Evansville brick manufacturers will figure on all these jobs. Brick manufacturers are also interested in a new canning factory that is to be built at Boonville. Ind. Another job in Evansville to be constructed this summer is an addition to the plant of the Schmadel Packing Co., that will cost in the neighborhood of $30,000. Several more improvements are contemplated. The Methodist Episcopal church at Hazleton, Ind., thirty miles north of Evansville, will build a parsonage this summer. It will be constructed of brick. A few brick residences are being planned for Evansville.

Iowa

War problems absorbed the bi-monthly meeting of the Iowa Division of the American Face Brick Association, held recently at Des Moines. The brick men declared the scarcity

of fuel and labor and the increasing cost of both, to be a serious menace to the brick industry. With an unusual amount of spring building being planned, they agreed that the situation is a serious one and discussed ways and means of appealing to the fuel administration and the labor departments for relief.

Kentucky

A recent statement at Benton, Ky., was to the effect that the Paducah Clay Co., operating clay holdings in the Benton district, had orders on hand for more than 100 cars of clay, and was obtaining business about as rapidly as it could obtain cars in which to handle shipments.

Several good orders have been placed for brick in Eastern Kentucky in connection with coal land development, the developers erecting brick power houses, commissaries, etc. One of these concerns is the Norton Coal Mining Co., of Nortonville, Ky., this house having asked prices and received bids on brick thru Architect Ben Price, of Birmingham, Ala., in February, for construction of additions to the power house and a new commissary.

Louisville, Ky., brick men are much interested in a recent announcement made by W. E. Glossop, Louisville City Building Inspector, to the effect that a new building code ordinance will shortly be drafted and submitted to the various building trades, underwriters, etc., before it is reported. The Louisville Brick Men's Association has been behind this movement for several months in an effort to have a fire code passed which will be more favorable to fireproof materials. New regulations became effective at Lexington, Ky., during the past year as a result of a bad fire, and a new code is being arranged at Paducah. Such ordinances have been badly needed for some time for the general protection of Kentucky cities, and their enactment will result in a better demand for tile, brick and other fireproof materials.

The principal change of the past month in Louisville, Ky., was the taking over of the Tyler Building Supply Co., by the R. B. Tyler Co., which becomes the largest retail and jobbing handler of fancy face brick, building supplies, etc., in the state. The Tyler Building Supply Co., was organized about three years ago to take over the business of Owen Tyler, who had operated in Louisville for a number of years, and who was at that time one of the largest jobbers. Isaac F. Tyler and Leo M. Parsons were the principals in the Tyler Building Supply Co., and go with the R. B. Tyler Co.; Isaac Tyler as sales manager, and Mr. Parsons as general manager. R. B. Tyler, continues at the head of the R. B. Tyler Co. The R. B. Tyler Co., will take over the state and local agencies held by the Tyler Building Supply Co., which includes the "Hy-Tex" line, the West Salem, McArthur and other prominent lines of brick, and a large number of specialty building supplies.

Improved weather conditions are resulting in a much better outlook in Louisville, Ky., for a resumption of general building. Already work has started on several additions to plants, and it is said that some apartment house building and medium priced residence work is in sight. However, work held over from last season and factory work is about all that has come out so far. The majority of this work calls for common brick, and is keeping the local brick plants fairly busy. There is no demand to speak of for fancy face brick just now, but that is expected to develop within the next sixty days. The local brick plants are all operating, and those manufacturing drain tile, hollow tile, and other

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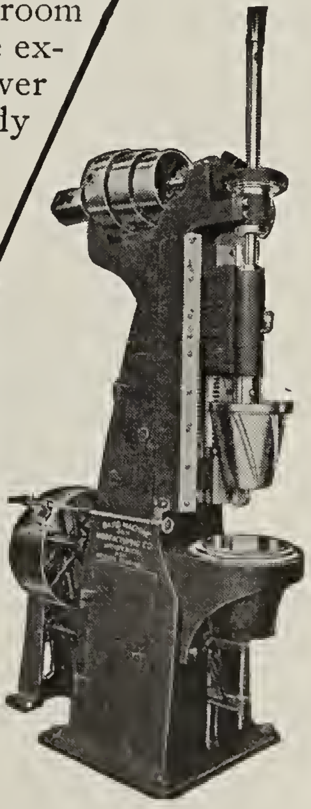

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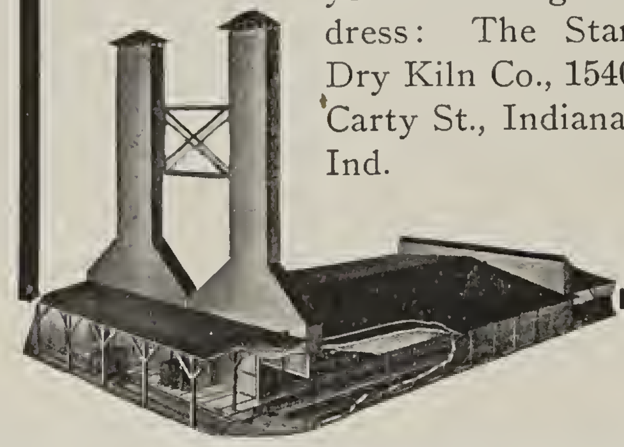

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Cleveland, Ohio

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clay products, are looking forward to some good Government orders a little later on. It is believed that more work will be done on draining land for agricultural purposes, but the supply of labor is so scarce that many farmers are content to handle such acreage as can be worked without tile.

Maryland

There is a decidedly more optimistic tone in the Baltimore market now than there has been for some time. The winter building, while not phenomenal, has considerably exceeded the expectations of the most sanguine, and there were not many sanguine people in the brick business in Baltimore during the late fall. The prospects for spring are brighter. There has been considerable trouble with deliveries, but that is a general and not a local condition, and the labor problem is also becoming more and more a problem, with the munition plants and the government enterprises offering the most flattering inducements to get men into their ranks. But with these handicaps, the brick men nevertheless are looking forward to the spring with confidence. They take the attitude that this is war time, and business cannot be just the same in war time. However, a great many of them are expecting to get their share of government contracts. The erection of the big proving ground in Harford county, the erection of the quartermaster's depot at Curtis Bay, and lastly the housing of the thousands of new laborers to be imported for the Bethlehem Steel Co.'s plant at Sparrows Point, will mean big business to the brick people. The United States government has announced its intention of spending $5,700,000 for these homes at Sparrows Point. This was announced by Chairman Edward N. Hurley, of the United States Shipping Board. An entire town is to be built; it will be laid out along the most modern and sanitary lines, and the brick men will be swamped with orders. Building a six million dollar town means buying a lot of brick, and that is what the United States government is preparing to do in Baltimore. The Baltimore brick men have been waiting for the thing to break for a long time, but the government's delay has discouraged them, time and again. The Shipping Board and the Labor Department have been at loggerheads, but it is now announced that they have patched up their differences. If this is true, then Congress can go ahead and pass its fifty million dollar housing bill, nearly six million of which is marked down for Baltimore.

Massachusetts

The Fitchburg (Mass.) Brick Co. has been awarded a contract to supply the city with 40,000 brick, for the construction of sewer manholes and other public works. The price bid was $13.50 per 1,000 at the yard or $14.50 delivered at the city yards.

The brickyard of Joseph Boucher at 178 Plantation Street, Worcester, Mass., is closed for the first time in 100 years. This plant, practically the only brickyard in the city proper, has long been a landmark and in recent years had turned out from one-and-a-half to two million brick a year. Mr. Boucher blames the war for his inability to continue business, practically all of his regular employes having been called to the colors or volunteered, and his supply of wood for burning having been cut off to a large extent thru inability to get wood cutters. The Boucher brickyard first came into existence, according to local historians, in 1790, when Worcester citizens discovered a bank of excellent clay on what is known as Dungarven Hill. With a few exceptions the plant has been operated annually since. More than 150,000,000 brick have been burned in the kilns but continual excavation of the pit has not materially decreased the apparent supply.

Michigan

The capital stock of the Saginaw (Mich.) Paving Brick Co. has been changed to $30,000, according to the amended articles of incorporation filed with the county clerk.

The Grande Brick Co., Grand Rapids, Mich., of which H. O. Joseph is manager, has been awarded the contract for brick for the addition to the plant of the Four-Drive Motor Truck Co., at Big Rapids, Mich.

Missouri

The Walter S. Dickey Clay Manufacturing Co. reports that business during the past two weeks has been extremely good. The Dickey plant at Kansas City has been exceptionally busy.

The A. P. Green Fire Brick Co. of Mexico, Mo., has been working close to capacity during the past month. The company reports that business has been exceptionally good and that the plant will be extremely busy for many months to come.

Harry Crowell, sales manager for the Hydraulic Press Brick Co. at Kansas City, Mo., declares that business has been increasing nicely during the past two weeks. Mr. Crowell says: "There was a noticeable increase in the demand in this city and territory for face brick beginning about a month ago, which seems to be steadily increasing in volume as the spring weather approaches. Regardless of conditions and tendencies to limit building operations, it seems that the coming season is going to be one of the best "Build With Brick" seasons that this city and territory has had for some time."

Building permits issued in Kansas City, Mo., so far this spring have shown a noticeable increase over the estimates predicted by most authorities in this territory. While the permits have not been as great in volume as those of previous years, in comparison there is an extremely nice increase in those issued for brick structures. It seems that the drive of the local real estate board in urging the construction of rental properties, such as apartments and flats, has met with a goodly result and of an extremely favorable nature to brick manufacturers and sales companies.

Brick manufacturers in the Kansas City, Mo., territory have been operating close to capacity during the past month. The concerns which felt the coal shortage found that relief of such nature was in sight that it was hardly likely a repetition would again be encountered this season. Steps have been taken to avoid the complications endured during the past year by the coal operators, railroad traffic managers and state fuel distributors and administrators. The operators have planned to continue the production on an increased basis and are urging that the dealers and all manufacturing concerns aid the operators, public and railroads in storing coal during the summer months.

The Western Paving Brick Manufacturers' Association reports that business in this territory has been extremely good of late. The secretary, G. W. Thurston, declares that the plants of the association have been literally swamped with orders and that they are now all working close to capacity. The coal situation having been les-

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sened by the early warm weather has aided the plants in maintaining operation, altho during the entire season there has been little difficulty in securing the fuel supply necessary as most all had contracted for an ample supply and in many cases priority of shipment was given in discrimination against other lines.

The State Highway Engineers' Association of Missouri recently held its annual meeting at the Hotel Muhlebach, at Kansas City. The membership of the association is formed by the country engineers of the state. The discussion which the meeting brought forth was the construction of county highways. The engineers devoted a large portion of their program to the discussion of the use of clay products in road drainage or the construction of culverts. The engineers declared that it was necessary that the matter of road drainage or the construction of brick and clay culverts first be attended to before any further work was begun upon the construction of a highway. From this standpoint the findings of the engineers is of vast importance to the firms manufacturing the materials designed for this purpose.

The price of brick upon the Kansas City, Mo., market has been about normal during the past month and manufacturers and dealers alike hesitate to indulge in statements regarding future prices, altho it is seemingly the consensus of opinion that prices will again be increased, because of the ever-increasing cost in manufacture. Common brick has remained normal about the $11.50 mark, and some authorities declare that another month or six weeks will see this commodity close to the twelve dollar mark, at least. This contemplation of increased prices is due almost solely to the expected increase in fuel rates in the state of Missouri, and the fact that the federal fuel board will increase the price of coal both wholesale and retail in the territory west of the Mississippi River. This will mean a necessary increase in the cost of manufacture and this increase will have to be borne by the ultimate consumer. The matter of increased price of Missouri coal which has been asked for by the twenty-five trunk line railroads doing business in the state, in the way of freight rates, means that the price of Missouri coal largely used in brick manufacturing plants in Missouri, will be advanced to such a point that coal coming from other states, even tho the haul be longer, will have to be substituted because of the favorable interstate rate. The increased freight rate in Missouri will mean discrimination against Missouri coal mine operators and upon the return of normal conditions, after the war, will have the effect of virtually closing every Missouri coal mine as the cost of production of that coal will necessarily make its wholesale and retail prices such that it can no longer compete in this market with the coal from Kansas and Illinois and Iowa, and other states from which this market draws a portion of its supply.

New Jersey

The Hackensack (N. J.) Brick Co., which has built up a big business, will operate to capacity this season. The yard has been modernized during the past two or three years and is now in good position to turn out its product rapidly and economically.

Passaic, N. J., is in a serious condition with reference to houses. A number of new factories are ready to begin operations there this spring and no place can be found for the workmen. It is true that something has been attempted in the direction of interesting builders in the situation, but thus far nothing has come of it.

The ice is out of the Hackensack River and barges can now operate to take down to New York the brick which were left last fall when the plants closed for the season. Not many brick are on hand, but a few were held over until this spring to carry customers along until the new brick are ready for delivery. Labor is hard to get this spring, while the cost of all operations and supplies is so much larger than ever before that the Hackensack yards are not planning as much activity as they have some years. As yet it is not known just what will be done, but it is understood that some of the plants will not operate to full capacity. The proportion of operation this year will depend upon developments of the next few weeks.

Generally moderated weather conditions in Newark, N. J., and neighboring sections have exerted a marked influence for good upon the building situation, and there is every indication that considerable new construction work will be undertaken in the near future. There is a heavy demand for housing accommodations in the city and suburbs, and tho there are a large number of buildings now under construction, the total will be insufficient to take care of the demand. It is generally understood that the coming spring will be an unusually active one in the building construction line, particularly in large industrial plants for war service.

Overcrowded conditions exist everywhere in the vicinity of Paterson, Passaic and other nearby New Jersey cities. Until something is done to relieve these conditions, it will be difficult to induce desirable workmen to make these places their homes. So far not a person has made any arrangement for the erection of new houses or apartments in Paterson this season. Half a dozen houses are needed in one locality, while as many more scattered thru the city would go a long way toward solving some of the living problems which confront the workingmen who want to come to these cities to make their homes. One excuse is that all the skilled builders have been attracted to Port Newark where the shipyards are located, and pay is so much higher than the average builder can afford to give. That doesn't help the situation, however, with reference to houses.

New York

Permits to the total of $139,850 were issued by the Building Bureau at Albany, N. Y., last month, going way ahead of the mark for the previous month.

The Monroe (N. Y.) Unit Brick & Tile Co. has filed notice with the Public Service Commission of the dissolution of the company.

The market for common brick in New York and vicinity is considerably better than it has been for the past few months, due to milder weather conditions. There has been an increased demand and a substantial number of inquiries for future deliveries. The market for face brick remains very quiet, but a decided improvement is looked for with the coming of spring.

The supply left over up the Hudson River is variously reported, but it would appear that sufficient brick are waiting there to start builders on their operations this spring. It will be some time yet before the yards that contemplate opening this year are in a position to do business. The long cold winter has put them in such

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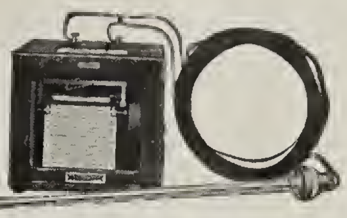

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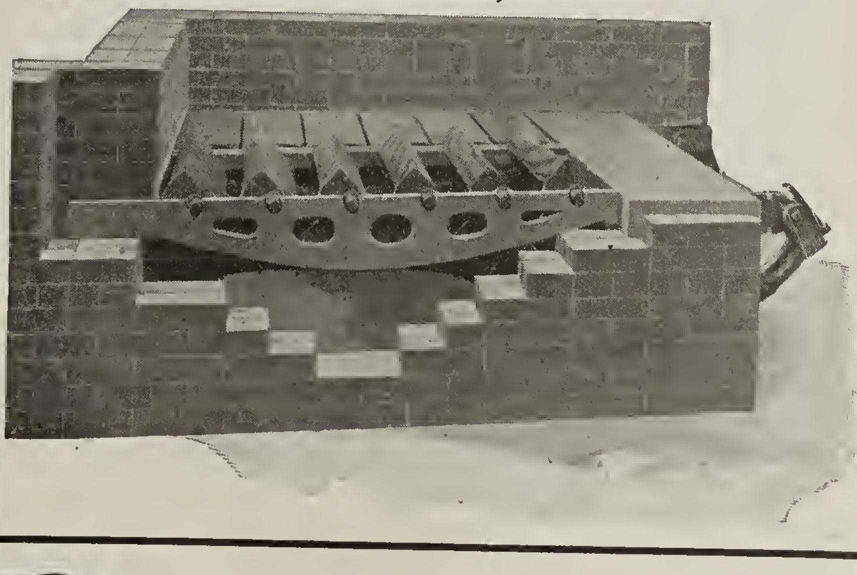

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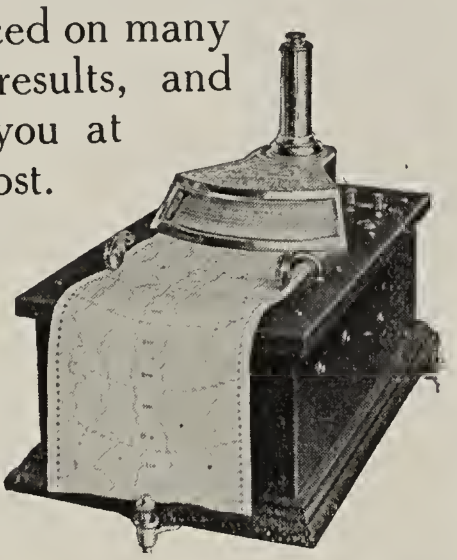

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You can safely guarantee that your brick will be

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shape that it will require a good deal of repair work to get them ready, and labor is scarce this spring.

Hornell, N. Y., expects a building boom this spring because of the great shortage of houses in that city. A large number of the Hornell factories are working night and day on war orders and have attracted a large number of workmen from other cities. As a result, the city is cramped for room and from 50 to 100 dwellings could be utilized immediately. The Chamber of Commerce there is contemplating the inauguration of a building campaign. There is plenty of land and altho the materials are high, they are obtainable.

The annual meeting of the Empire Brick & Supply Co. was held recently at the principal office of the company at Stockport, N. Y. At this meeting the following directors were re-elected for a term of two years: Robert W. Main, Arthur S. Main, and William H. Edsall. The following officers were elected: President, Wright D. Goss; vice-president, Robert Main; treasurer, William H. Edsall; secretary and assistant-treasurer, Robert W. Main. The New York offices of the company are located at 103 Park Avenue.

Syracuse, N. Y., is going to fix its own pavements in the future, so the Common Council has advertised for bids for supplies and equipment for highway improvements. The city built an asphalt plant several years ago and used it for a few seasons, but it has been lying idle for the past year or so. The administration was attacked for not using it, so is now going ahead and making use of it. Among the supplies the city will advertise for will be 45,000 paving brick, 300 tons of fluxed asphalt, 50 barrels of cold patch, a carload of Portland cement and a boatload of sand.

Deeds have been recorded in the office of the county clerk of Onondaga County, New York, conveying the farm of the late George W. Marvin, of Warner, N. Y., to the Onondaga Vitrified Brick Co. and from this company to the newly organized Onondaga Brick & Tile Corporation, which took over the business of the former. By acquiring this property the brick and tile corporation gets a large quantity of shale which is used in the manufacture of its products at Warner. The new company is enlarging the plant and getting ready to carry on a greatly increased business in brick and hollow tile.

Ohio

The Ironton (Ohio) Fire Brick Co. has increased its capital from $20,000 to $50,000.

H. M. White, sales manager of the Hocking Valley Products Co., Columbus, Ohio, reports a slightly better demand for face brick in Columbus and immediate vicinity altho conditions in more distant points show practically no improvement.

There is reported to be a better demand for common brick in Cincinnati, Ohio, altho the plants are not yet operating to capacity. Little new work is being given out but indications point to a better condition, in the number of inquiries being received.

Reports issued by Building Commissioner Rendigs, Cincinnati, Ohio, show that there were 681 permits issued for construction in the month of February, amounting to $249,700, as compared to 872 permits and $841,490 in the same month last year.

The managers of the Y. M. C. A. of Columbus, Ohio, which will erect a $90,000 Colored Y. M. C. A. building at

Sixth and Long streets, has selected Claycraft brick for the facing. In all about 50,000 bricks will be used for that purpose. The actual construction of the building will start within a month or six weeks.

Factories in Ohio making fire brick are being operated at full capacity. Practically all of the fire brick business in the state is under government orders or is shipped to plants which have secured priority shipping orders and thus business is generally booming. Labor is not as plentiful as might be desired altho the output has not been materially curtailed because of labor shortage.

Governor Cox, of Ohio, has requested Director General of Railroads McAdoo to prefer tile shipments for farm use, in order to furnish farmers with tile for the draining of land before the spring planting season starts. The outlook in Ohio is so serious that the governor has been appealed to for the transportation facilities. There are many car loads of drain tile awaiting shipment in the Buckeye state.

Quite a few of the face brick manufacturing plants of the Hocking Valley district of Ohio, which had coal lands, are now selling coal in the open market. Many of these plants have coal mines from which they produced coal to be used in brick manufacturing but with the temporary closing of the plants, because of sufficient face brick on hand to take care of present demands, the attention of the managers of the companies has been directed to the coal industry and quite a large tonnage is produced. The coal readily sells at the government fixed price.

The common brick trade in central Ohio is rather active as there is considerable factory construction going on. Prices for common brick are strong, ranging at $12 for mud brick and $13 for shale brick. Factories, many of them engaged in government contracts are being erected or enlarged and many thousands of common brick are used. Among the factories going up is one for the American Chain Co., another for the Okey Machine Co., and large buildings for the enlargement of the repair shops of the Pennsylvania Lines.

Interests connected with the building materials industry were urged to investigate the new sanitary code of Cleveland, Ohio, which the Chamber of Commerce has been instrumental in drawing up, by Finance Director Neal at the last meeting of the Cleveland Real Estate Board. According to Mr. Neal, there are several provisions in the new code that will retard the building of moderate priced homes, the kind most needed in Cleveland. He said that no apartment house built in Cleveland could pass the test, and suggested that builders and real estate men rewrite the code if it is not satisfactory.

L. L. Dennison, president of the Delaware (Ohio) Clay Products Co., has gone to Washington, D. C., to plead with Federal Fuel Administrator Garfield in an effort to get sufficient coal to operate his plant. He says the plant is working on war orders, which were taken with the understanding that coal would be supplied and cars would also be furnished to move the finished product to its destination. Priority orders formerly in force were issued to prefer his plant in the distribution of coal, but since the federal government has taken over the railroads all priority orders are cancelled and now the concern has to cease operations because of lack of coal. The plant is handicapped farther by the fact that clay manufacturing plants cannot afford to use high priced coal.

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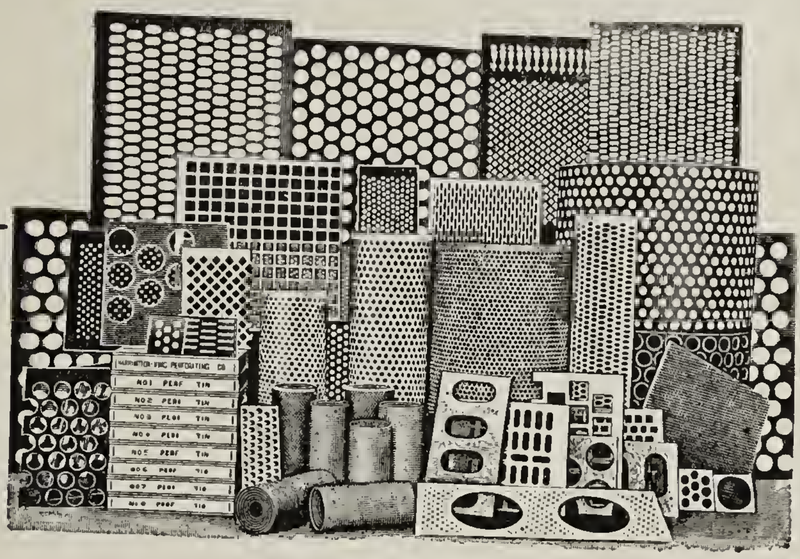

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NEW YORK PHILADELPHIA PITTSBURGH

A strong effort is being made for the further improvement of the Ohio river from Pittsburgh to Cairo, in the interests of transportation. It is pointed out that since our railroad systems are so congested the wise thing to do would be to make the Ohio navigable the year round by the building of dams. Quite a large sum of money has been spent on the river and another congressional appropriation is asked. The Ohio Valley Improvement Association, of which John L. Bance, Sr., of Columbus is president, has been working along that line for years. A meeting of mayors and other city officials of all Ohio river towns was held at Cincinnati recently to urge that the government take immediate action in order to relieve freight congestion. It is believed that the river can be used for the transportation of brick and clay products and especially the output of the potteries of East Liverpool and adjoining country.

In the hope that part of the anticipated $50,000,000, provided for in a bill now pending before Congress will be diverted to Cleveland, the Cleveland Real Estate & Housing Co. has been formed in Cleveland, Ohio, to build houses for war workers. It is estimated that at least 10,000 houses are needed. A request for government sanction for a $500,000 stock issue, which might be increased to $2,000,000, may be asked by directors of the company. According to Miss Charlotte Rumbold, secretary of the housing company, this money would be used to pay cash to builders of the houses, and mortgages taken from the workers who buy them would be placed with banks to provide funds with which to build other homes. So far $10,000 has been issued by the company. Paul Feiss is chairman of directors.

Oregon

The Shope Brick Co., of Portland, Ore., has invented and is now offering for sale a cement face brick made at its local plant, which it is claimed can be made at 25 per cent. less than the cost of clay brick. Brick of any kind can be provided with ordinary sand and fine gravel. The company has just sold to the Tuolumne Lumber Co., Modesto, Cal., the right to manufacture cement brick under the Shope Brick Co.'s patent. The Shope company has sold 200,000 cement brick in the past eight months. The cost averages about $12 per thousand for the manufacture of various faces of brick.

Pennsylvania

Announcement is made of the appointment of Richard A. Ward to the general managership of the Wilkes-Barre & Hazelton Brick Co., at Wilkes-Barre, Pa., which concern operates several plants in Luzerne county.

Increase in capacity of its plant is planned by the Sharon (Pa.) Clay Products Co., thru $100,000 increase in its capital stock. Local men who are active in the company are George Collard, William McIntyre and Arthur Krouse.

Announcement was made in the February 12 issue of *Brick and Clay Record* of the incorporation of the Martin Brick & Paving Co., at Pittsburgh, Pa., by W. A. Iseman, F. P. Bush, T. Martin and others. We are advised by S. C. Martin that this newly proposed company is not in any way connected with the Martin Brick Co., with offices in the Empire Building, Pittsburgh, nor are any of the officers of the last mentioned concern in any way interested in the new company.

South Dakota

The Dakota Pipe & Tile Co. has been incorporated at

Watertown, S. D., with a capital of $100,000, by C. H. Atkinson, S. X. Way and Stanley H. Edmunds.

Texas

The Rio Grande Brick Co. has been incorporated at Laredo, Texas, with a capital stock of $20,000, for the purpose of manufacturing brick. The incorporators are: A. D. Sory, L. W. Carroll, and H. C. Crumpler, all of Laredo.

Virginia

The contract for the $150,000 dormitory building to be erected at Schoolfield, by the Riverside & Dan River Cotton Mill Co., has been awarded to T. C. Thompson Bros., of Charlotte, Va., according to an announcement made by H. R. Fitzgerald, president of the corporation. Work will be commenced as soon as the weather permits operations. The plans for the dormitory give evidence that an elaborate building is to be erected—one that will call for 1,000,000 brick.

Canada

The Whitemouth (Man.) Brick Co. Ltd., has been sold to Carter, Halls, Aldinger Co.

A company is being organized in Toronto, Ont., to manufacture fire brick. Clay will be imported from the United States.

Montreal (Que.) Pottery, Limited, has been incorporated with a capital of $100,000 by A. R. W. Plimsall, R. Brodeur, and R. Genest.

Owing to the fact that few bush gangs are operating in Canada this winter and that lumber supplies are running short, there is every prospect of an increased use of clay products this year.

The British Treasury has given bondholders of the Ontario National Brick Co., which operates a large plant at Cookesville, Ont., permission to participate in the reorganization plan of the company, which involves a cash subscription to new bonds equal to twenty-five per cent. of the original holdings. This will facilitate reorganization, particularly as some of the larger British holders have expressed their willingness to come in. A charter has been taken out for a reorganized company to be known as the Shale Brick Co. of Canada, Ltd. The authorized capital will be $1,600,000, the equivalent of the old bond issue, and there will be an authorized bond issue of $500,000, of which $400,000 will be issued at the outset.

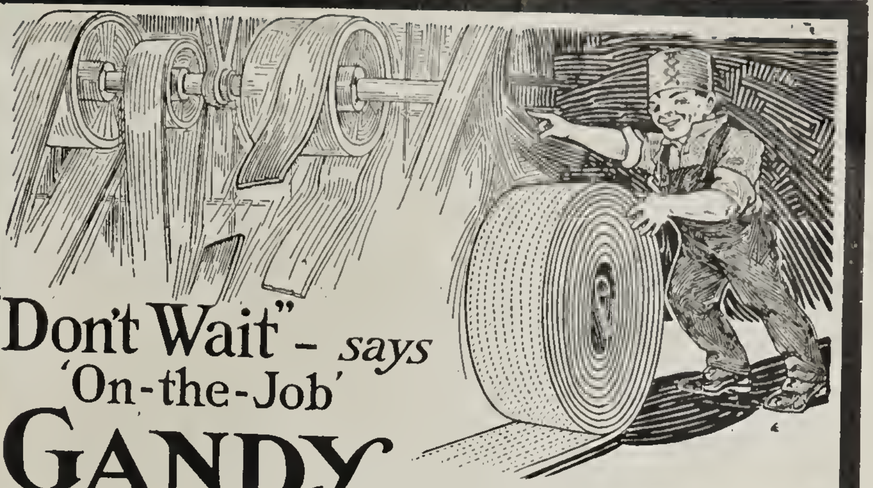
* * *

Magnesite Production in Canada

The production of magnesite was confined to the deposits in Argenteuil county, Quebec, according to the preliminary report on the mineral production of Canada, during the year 1917, recently issued by the Department of Mines, Ottawa.

The shipments of magnesite in 1917, were 58,090 tons, valued at $728,275, and include crude ore, calcined magnesite (burnt in lime kilns), and dead burnt clinker (sintered in rotary kilns after mixture with about 5 per cent. of magnesite). The crude ore was sold at about $10 per on, the calcined at $28.50 and the clinkered, or dead burned material at from $40 to $46 per ton.

The shipments in 1916, were 55,413 tons, valued at $563,829, or an average of $10.17 per ton, and 14,779 tons valued at $126,584, or an average of $8.56 per ton, in 1915.



"Don't Wait" - says 'On-the-Job' GANDY

Never trouble trouble 'til trouble troubles you is good advice to follow—sometimes—but not in wartimes.

If you want to help your country "over there", don't run the risk of serious tie-ups "over here".

Anticipate your production needs—get in your orders for GANDY, the original stitched cotton duck Power, Thresher, and Conveyor belts —AT ONCE.

You can bank on us to fill your orders promptly, but remember every carrier is loaded to capacity, and government supplies have right of way.

Call on our Engineering Department to solve your transmission problems. We stand ready to give you "up-to-the-minute" service.

Order from your mill supply house or from us direct.

Always look for the well known GANDY trade mark and the painted green edge.

Samples and price list on request.

The Gandy Belting Company

732 West Pratt Street
Baltimore, Md.
New York Branch: 36 Warren St.

That Proves I Am Right

Why According to Government Figures Every Time You See Smoke Coming from Your Stack You Can Say to Yourself: "Well There Goes One-Fifth of My Coal up the Stack as Soot."

Remember, that one-fifth of your coal isn't giving up any heat units. It is absolutely wasted.

With bituminous coal at $6.00 per ton you are losing about $165.00 per boiler per month.

But the POINT is, that the Jones Under-Feed Stoker will save you that $165.00, because it assures you perfect fuel combustion, smoke abatement, and even steam pressure.

Send for our book No. 6, it tells the story.

The Under-Feed Stoker Co. of America

General Offices:
Harris Trust Building - Chicago, Illinois

Branch Offices in the Following Cities:
New York, Buffalo, Kansas City, Salt Lake City, Pittsburgh, Cincinnati, Denver, Charlotte, Philadelphia, Toronto, Detroit, New Orleans, Boston, Minneapolis, Toledo

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Business Enthusiasm Warranted

Samuel A. Weller, head of the Weller art pottery interests in Zanesville, Ohio, and identified with other institutions in that district, when in Pittsburgh a few days ago declared that "apprehension in some quarters as to the economic effect the end of the war will have in the United States is wholly unjustifiable."

In explaining this statement, Mr. Weller said: "If all the business people of the United States would look upon the inevitable postbellum period of readjustment with the same optimism as I find in Pittsburgh, there would be no retrenching after the war, but a general improvement in our economics, and a resultant prosperity, the scope of which we now little dream. I find no apprehension in Pittsburgh. Bankers and business men are determined that business shall go right ahead—and become more extensive. We all know there will be a general readjustment of things after the war and business men will be conservative during that period—observing the effects, as it were—but they must not be conservative to the extent of hurting themselves and the commerce of the country. I have talked with many representative business men lately, and the consensus of opinion among them is that our domestic affairs will expand in a way that will be unprecedented in the history of the United States. Our export trade will extend into countries heretofore little or not dealt with.

"We need the same fighting spirit in business and finance as those boys of ours in France are now showing; we need business enthusiasm, enthusiasm invulnerable to the whims and plaints of the ever-ready pessimist. With that, America is bound to be the most prosperous country on earth."

At a recent annual meeting of the Sanitary Managers' and Superintendents' Association, held in the American Mechanics' Building, Trenton, N. J., at the quarters of the Manufacturing Potters' Association, Frederick A. Walker, superintendent of the Crescent plant of the Trenton Potteries Company, was elected president of the organization, succeeding John F. Kelly, of the Thomas Maddock's Son, who has served in the capacity of president for the past three years. This association is unique among organizations, and is helpful in solving the troublesome problems in the industry, especially along the line of labor matters. It has the support of the Sanitary Potters' Association under whose auspices it was organized. The membership is confined to the sanitary industry, and numbers practically every superintendent, foreman and manager of industries in this vicinity.

At a recent annual meeting of the Sanitary Pottery Salesmen's Association, held at the quarters of the Manufacturing Potter's Association, American Mechanics' Building, Trenton, N. J., the following officers were re-elected: F. D. Miller, Camden Pottery Company, Camden, president; J. Nelson Kise, Trenton Potteries Company, Trenton, vice-president; George G. Dyer, Sanitary Potters' Association, secretary-treasurer and umpire. Interesting reports were made by various members of the organization as to conditions in their respective territories. Three members of the association are at the present time in various branches of the army, while several others are engaged on government work.

Local No. 45, Sanitary Pressers, of Trenton, N. J., has raised a service flag with a great many stars thereon. Employes of the potteries have responded liberally to the call for men and the ranks of workers are so badly depleted that the potters feel the difference in their operations. Reductions of fifty per cent. at the instance of the conservation boards of the government make these workers less missed, but the complement is far too small now. Business is good with all the potters, and most of them have sufficient orders to keep them going for some months to come.

White clay properties at Charleston, Miss., are being developed by Mississippi investors, who have just incorporated the Southern Ball Clay Co., for the purpose of increasing the output. This company is capitalized at $600,000, and it has been organized with the following officers: President, Garrett E. Lamb; secretary, W. S. P. Doty; treasurer, J. T. Thomas—the latter two of Grenada, Miss. Mr. Lamb is a resident of Charleston, Miss.

The Fallonite Co., Newark, N. J., manufacturer of emery wheels, has leased the large pottery plant formerly occupied by the Imperial Porcelain Co. at Newtown, Pa. The company is planning for extensive improvements to the pottery, including the erection of an additional kiln, and negotiations are under way for the acquirement of property adjoining the plant for the proposed extensions.

The Shaw Pottery Co., Trenton, N. J., has been incorporated with a capital of $50,000, to engage in the manufacture of porcelain. Jonas A. Fuld, James Shaw, and Enoch Montford, Trenton, are the incorporators.

The Onondaga Pottery Co., Syracuse, N. Y., is making rapid progress in the construction of a new one-story addition to its kiln building, to cost about $7,000.

Nominations for officers for the coming fiscal year for the National Brotherhood of Operative Potters, will be taken up at all local union meetings in March. The annual election will be in May. President Edward Menge is being opposed for re-election, but it is reasonable to believe that he will be successful in the referendum vote.

The Union Chemical Glassware Co., of New York City, has taken out incorporation papers at Albany, N. Y., with a capital stock of $30,000. The incorporators are: D Buegeleisen, J. S. Eishon, and A. L. P. Pollack, all of 601 West 168th Street, New York City.

⁂

Vitrified Pipe Helps to Solve Difficulty

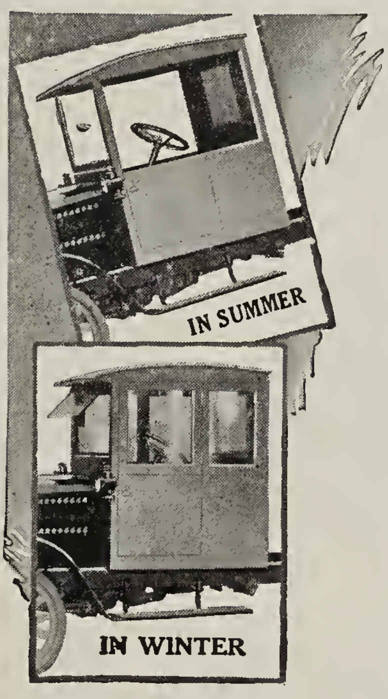
An illustration of the enlarged field of use for vitrified pipe comes from the city of Savannah, Ga., where Chief Engineer Conant is preparing to use 18 inch vitrified pipe as a conduit in connection with the city water plant. This is a gravity line with little or no internal pressure. Engineer Conant says that he has devoted some study to the question of getting a perfectly impervious joint and thus avoid any waste of water.

The result of his investigation has been a determination to use the poured grout joints. Forms for the joint material are being constructed by the Wyatt Engineering Co., Columbus, Ohio.

Snow-Proof, Wind-Proof, Rain-Proof

THE past winter has proven the acid test for the ALL-YEAR Cab in the brick and clay industry. By fully protecting drivers, uninterrupted schedules were maintained, increasing financial results for owners.

As this winter, so this spring, the ALL-YEAR Cab will afford your drivers full protection from March winds and Spring rains, increasing their efficiency and eliminating unnecessary layups of your trucks. In summer the ALL-YEAR Cab is quickly changed into a cool, open housing by removing the winter attachments, consisting of side, door, and rear windows.



KISSEL TRUCKS

There are five new sizes—a truck for every business—a size for every purpose. The Kissel built-in strength in frame, axles, springs, brakes and other structural parts—the sturdy Kissel-built power plant equal to all power demands, insure dependable performance and reliable service necessary to maintain continuous haulage and delivery schedules.

Investigate the new Kissel Trucks and the ALL-YEAR Cab. Send for literature and specifications, or see your nearest Kissel dealer.

Kissel Motor Car Co., Hartford, Wis., U. S. A.

SAY I SAW IT IN BRICK AND CLAY RECORD

KARS of DIRT

Watt Kars bring an uninterrupted flow of Your Dirt to the plant, and that means

WARE

WATT KARS

are enough different to be distinctive. Constructed in a factory that specializes on Kars, they are stout, tough, easy running, and they give uninterrupted service.

Get our facts and figures on clay Kars

THE WATT MINING CAR WHEEL CO.
BARNESVILLE, OHIO
U. S. A.

SAY I SAW IT IN BRICK AND CLAY RECORD

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

Clarage Fan in New England

The Clarage Fan Company of Kalamazoo, Mich., announce the appointment of H. P. Curtiss as their representative for the New England states. Mr. Curtiss will have his office at 120 Milk Street, Boston, Mass.

The Clarage Blower Fan has already been installed and is well known on many clay product dryers. It is a multiblade fan and its extremely high efficiency is due in part to this point.

In drying clay ware it is absolutely necessary to secure a steady and uniform volume of air flow, and of course the Clarage Fan satisfies this condition, hence its popularity.

The bearings used on Clarage outfits for clay plants are especially designed to resist the action of dust and heat, and are particularly successful.

Mr. Curtiss has spent many years in the blower and fan business, and accordingly the New England clay plants may confidently expect good service from both the Kalamazoo and the Boston office of the Clarage Fan Company.

⁂

Clay Plant Auxiliary Equipment

Where to buy the small tools, the grindstones, the packing, valves, pipe, wire, switches and the multitude of other small but necessary equipment for the factory, is solved with Geo. B. Carpenter & Company's catalog.

It contains in eleven hundred pages a descriptive list of all of that accessory equipment that makes a plant run smooth.

The annoyance of trying to find out where to buy this, and who sells that, is wholly eliminated, for under one roof is concentrated the auxiliary needs of the entire clay industry. Convenience, economy and speed in delivery are thus integral parts of any purchase thru the catalog.

If you will address Geo. B. Carpenter & Company of Chicago, Ill., Department 6, you may have this volume free and without any obligation.

⁂

Mechanical Stoking of Fuel a Saving

It is unnecessary to offer arguments in favor of mechanical stoking, for the advantage of removing the human factor wherever possible is conceded. Also the underfeed system of burning bituminous coal has been established as the ideal method.

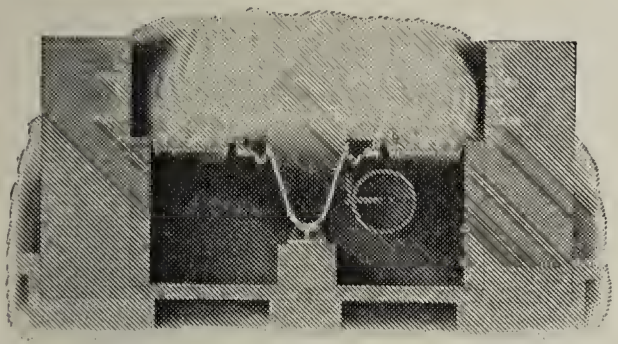
The Jones Stoker was the first underfeed mechanical stoker to come into commercial use and it was also the first stoker with which it was possible to proportion air and fuel supply to meet varying load demands. More than twenty years ago this stoker was placed on the market and its wonderful and continued success is due solely to the merits of the stoker. While it has been developed and improved, the fundamental design, which experience has proved is the correct one, has not been changed.

Simplicity, service, and saving are the watchwords today as they were when the first Jones Stoker was built.

It is adaptable to any type and size of boiler and to any grade of bituminous coal. In addition to the generation of steam, its usefulness in any field where constant and easily controlled high temperatures are required has been demonstrated, and it is being successfully used in heating, annealing, melting, welding, and forging furnaces, drying kilns, etc.

In order to adequately explain the ways of using the Jones Stoker on clay plants, a new booklet has recently been issued, by The Underfeed Stoker Company, which contains drawings, general data and descriptions of actual installations.

These installations are varied in their use, and cover almost the entire possibilities, thus the Jones is shown under power boilers, which of course is its greatest field, and in furnishing direct and steam heat to all types of dryers. The advisability of saving fuel, not only in small quantities, but in large quantities is so apparent that only a few suggestions are necessary.



Cross Section Thru Furnace. The Air for Combustion Is Supplied Under Pressure from Air Chamber and Passes Thru Openings in Tuyere Blocks Into the Furnace

An effort must be made, an effort that is real and productive, in order that a chance to continue in active business may be yours. The will to save, and the ability to save will both receive favor by the Government, but actual coal saving will mean preference for your plant in addition to the money saved and in your own pocket.

Fuel must be saved and the Jones saves it, what more natural then than for you to look into the merits of an appliance that not only will save fuel and money, but procure immunity for your plant from an enforced shut down.

Your copy is ready, ask the Underfeed Stoker Co. of America for it. Address them at the general offices in Chicago, Ill.

⁂

The Clay Tile Silo

A letter recently received by The Pierce Company of Kansas City, manufacturers of silo accessory hardware, from the Hinman Silo Company of Denver, Colo., illustrates clearly the worth of the silo business today, and the value attached to Pierce Steel Silo doors by the Hinman Company. The letter follows:

"During the 1917 season we built 226 hollow tile silos in which we used your square steel doors and frames. These silos were filled last fall and the silage has now been entirely fed from some of them, which gives us sufficient opportunity to judge the merits of your door.

"As you know, we have in the past used several types of doors in our tile silos and we are pleased to be able to advise you that your square steel door is the most satisfactory one we have ever used. It is the most convenient and requires the least time for placing in the silo. It is the most easily operated. It presents the best appearance, forms the least obstacle to settling silage and when the door is set in place with a paper gasket, it excludes the air more completely than any other type of door we have used. We have used this square steel door in silos twenty feet in diameter and fifty feet high and it has stood the strain when these silos were filled, some of them with very green corn. We believe this is sufficient evidence of its strength.

"We believe our opinion of this door is best expressed in the fact that we have given you an order for sufficient doors for 400 silos in 1918.

"Thank you for the interest you gave the matter of making

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

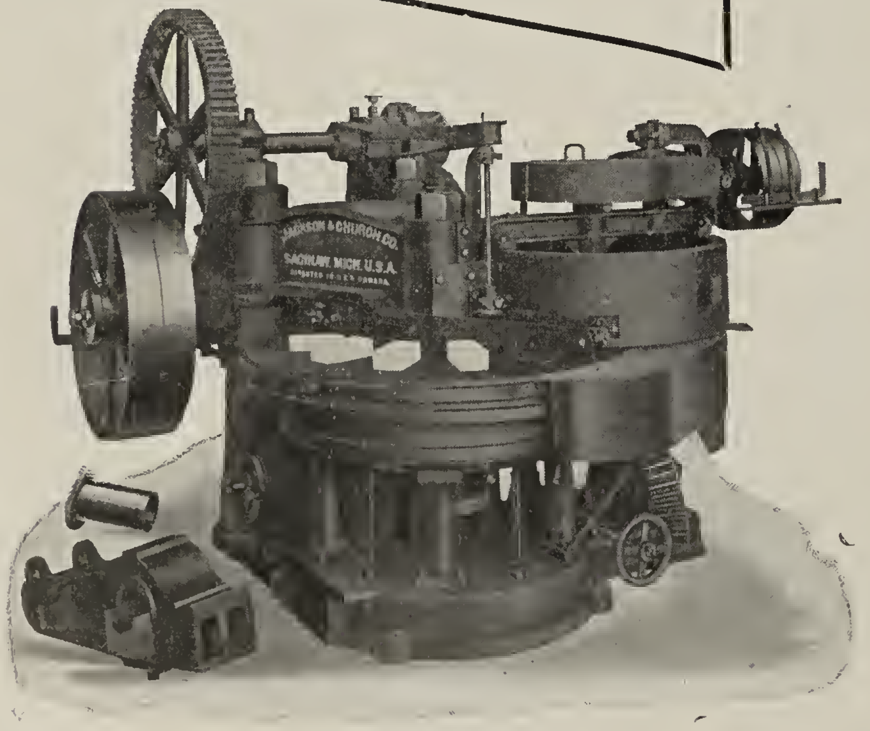
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

an efficient silo door, which resulted in the present square steel door mentioned above."

⁂

Trailers Make Overland Trip From Detroit to Pittsburgh

The Fruehauf Trailer Company, of Detroit, recently completed two ten-ton semi-trailers which were attached to tractors and driven to Pittsburgh during most adverse weather conditions.

The units are to be used by Scriber & Morrow, of Coal Valley, Pa., in hauling coal from a mine near Pittsburgh.

Each trailer is equipped with a ten-ton hydraulic hoist. The bodies of the trailers, which are seven feet wide, 12 feet long and four feet high, are all-steel lined and were built especially to handle coal.

"These large semi-trailers are particularly adaptable to coal handling and will decrease haulage costs over one-half," said H. C. Fruehauf, general manager of the Fruehauf Trailer Company.

"The trailers can be hauled easily by 3½-ton trucks and thus treble the capacity of the hauling unit. We have clearly demonstrated that Fruehauf trailers will cut transportation costs from 50 to 200 per cent. in the coal business and save time as well, which is a most important factor."

Fruehauf Trailers on the Way to Pittsburgh

It is a self-evident fact that the haulage of clay products of all kinds would be reduced in cost in the same proportion as the coal haulage, if the Fruehauf trailer were utilized.

Sewer pipe, brick, terra cotta, fire proofing, and similar products are bulky and a lower transportation cost is produced if they can be carried in big bulk. This, of course, is one of the main functions of this trailer, and therefore its value to the clay industry is very promising.

⁂

The Walter A. Zelnicker Supply Company has recently secured the services of G. W. Bichlmeir, who prior to his association with the Zelnicker company was connected with the supply departments of the Missouri Pacific and Kansas Ciuty Souhtern Railway Companies as well as having been secretary-treasurer of the W. L. Sullivan Machinery Company. Mr. Bichlmeir is connected with the Zelnicker machinery department.

⁂

The Westinghouse Electric and Manufacturing Company of East Pittsburgh, Pa., has recently secured the exclusive sales agency for the United States for Frankel solderless connectors, widely used for joining electrical wires and cables. Manufacturing facilities have been increased by the Frankel Connector Company, in order to care for the new business to be secured through the Westinghouse sales organization.

The Westinghouse Company will act also as a distributor of Frankel testing clips.

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Get This Straight!

UNQUESTIONABLY, no small amount of interest will develop upon the reading of the following pages as to the part played by *Brick and Clay Record,* at the conference on March 13, at the office of P. B. Noyes, director of conservation, United States Fuel Administration, Washington, D. C., at which the Administration's policy with regard to curtailment in the clay products industry was settled.

The question may be asked—and properly—as to why *Brick and Clay Record* was called into this conference in view of the existing war service committees which some branches of the industry have very progressively appointed. We have said "and properly"—we mean that this question is a proper one to address to the United States Fuel Administration, not to *Brick and Clay Record.* However, for the information of our readers, the writer will be glad to offer his opinion as to the why and wherefor of personnel of the advisors in the March 13 conference.

In the first place, *Brick and Clay Record* was requested by the United States Fuel Administration, in the person of P. B. Noyes, to meet with him on the date mentioned. It was our patriotic duty to go and not to ask questions, so we marched like good soldiers.

From what passed at the conference it was apparent to *Brick and Clay Record* that the real reason for its presence in Washington was due to the failure of at least one branch of the industry to furnish the proper representation in the conferences which the Fuel Administration has already had with clay products manufacturers.

There is no question but that the sewer pipe people, thru their principal organization, the Clay Products Association, Geo. H. Tefft, secretary, and its war service committee, made a most lucid presentation of their case. They were, in fact, complimented by Mr. Noyes for the business-like manner in which they approached the Fuel Administration. Moreover, the American Face Brick Association, thru its war service committee, and the Refractories Manufacturers' Association likewise, handled their end of the negotiations in a highly commendable manner. Paving brick manufacturers were on the job and it is very evident that the hollow tile makers did not allow the grass to grow under their feet in seeing that the Fuel Administration was fully advised as to the needs of that particular branch of the business.

The common brick manufacturers failed miserably in their dealings with the government in this matter, a fact which was corroborated at the meeting in Chicago, on Monday, March 18, and which is more fully dealt with on page 581 of this issue. It is entirely unnecessary to go into detail as to why the common brick branch of the industry fell down. Individual manufacturers were not so much to blame as was the system of things which has surrounded this branch of the industry for some time. To speak plainly, the National Brick Manufacturers' Association. Suffice it to say that the larger common brick manufacturers have taken advantage of the recent happenings at Washington, and learning a valuable lesson, have already resolved to apply it to future action. In other words, active steps are being taken to put the common brick branch of the clay products industry on a business basis.

It is the writer's opinion that the Fuel Administration was discourged at the lack of co-ordination among the various branches of the industry, therefore, gave up in despair and turned to the largest single wholesome influence in the industry for advice, namely, *Brick and Clay Record,* and to the most capable ceramic engineer, A. V. Bleininger.

Speaking of a lack of co-ordination, it has been said by leaders in the industry that it was hardly possible with conditions existing as they were, and with common brick being misrepresented, as it was. Now, however, indications are numerous that, at a not distant date, it will be possible for the various branches of the clay products industry to get together as a whole, if needs be, by the appointing of small committees to act on matters of mutual interest.

The decision reached at the March 13 conference at Washington, under the circumstances, it is believed, will prove satisfactory to most manufacturers of clay products. In fact, we believe that the industry is to be congratulated upon the determining of such a favorable policy in so short a time after it had been demonstrated that it was practically impossible to arrive at a satisfactory agreement proceeding on the basis upon which the conference between the representatives of the industry and the Fuel Administration had been started.

One of the most significant developments at the close of the March 13 conference was the presentation by Mr. Noyes of a plan covering railroad transportation which he hopes to have adopted by the various war boards in Washington.

This plan, in brief, contemplates the abolishing of priorities. In this connection, Mr. Noyes cited authoritative figures showing that in the case of the Pennsylvania railroad alone priorities had reduced the efficiency of that carrier to an alarming degree. Instead of priorities, Mr. Noyes would have a preference list in which Class A would be fuel for homes, public utilities, hospitals, and so forth. In other words, Class A would be a fuel proposition, pure and simple. In class 1 would be placed munitions, food, and so forth; Class 2, so-called "peace time necessities," into which class clay products fall; Class 3, luxuries.

Mr. Noyes said that he believed if this preference list was adopted and put into effect it would result in providing sufficient coal for classes A, 1 and 2, but that class 3 would have to shift for itself.

This is really encouraging news, especially in view of the question that has been asked by many clay products manufacturers as to whether or not they would be able to obtain coal to operate even to curtailed capacity.

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Drain Tile and Open Price

ON ANOTHER PAGE of this issue there appears a mighty interesting article by W. S. Elton, of the Richland (Ia.) Tile Co., on "Success of Open Price in Iowa." This article tells in a very lucid manner the wonderful results that have been brought about by the open price plan in the Hawkeye state where manufacturers of drain and hollow building tile have undertaken to give the widest publicity to their quotations.

When Arthur Jerome Eddy wrote his epoch-marking book on "The New Competition," there were many who thought that he was nothing more than an extreme theorist who was running around loose—this in spite of the fact that he gave testimony of beneficial results accomplished by business men who at that time had been operating under the open price plan for a number of years.

There are still many scoffers who refuse to admit the wonderful possibilities that are contained in the open price system, but happily they are growing smaller and smaller in number. Not a few branches of the clay products manufacturing industry are now using the open price system and report it a success. In nearly every case these branches are well organized, but that drain tile makers should adopt the plan and give convincing evidence of its splendid results is certainly encouraging, considering the fact that, with the exception of a few states, this branch of the industry is not well organized.

A short time ago the matter of organizing a national association of drain tile manufacturers was taken up. At that time the writer suggested that a national association of this branch of the clay products industry was not needed nearly so much as strong organizations in each state and district. You cannot build a permanent and lasting house on a straw foundation. If any useful national drain tile association is to be formed, we believe it should be on the foundation of strong state units.

Iowa has shown a commendable spirit of progress in organizing its drain tile manufacturers and adopting the open price plan. Indiana has a good drain tile association and Ohio and Illinois are coming fast. *May we not recommend the open price plan to those associations who have already secured the nucleus upon which to work*, and may we see more states following the lead of those who have already under way the effecting of an adequate drain tile organization.

Fortune has been mighty good to the drain tile manufacturer. He will be permitted to operate his plant to capacity during 1918, while other branches of the industry must curtail their fuel consumption. Furthermore, the government is encouraging the tiling of farms. But we cannot always hope to have such favorable conditions. *Preparedness is the keynote for the future and it will be well for every drain tile manufacturer to prepare.* He can do this by aiding and encouraging the right kind of an organization in his state or district.

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Coal Contracts

SINCE the clay products industry is the third largest consumer of coal in normal times in the rank and file of industries, it is very evident that the men who are making clay wares are bound to be interested to a vital degree in the possibility of adequate coal supply during 1918.

The Editor of the "Black Diamond"—a national coal weekly—in an article in the March 23 issue of that publication, entitled. "Coal, the Steam User and the War," brings out some very interesting and valuable points.

While it may seem (in view of the declaration of Fuel Administrator Garfield, that he proposes to modify, when and how he pleases, any coal contract which may be made) to be unwise and unnecessary to enter into a contract covering fuel supply this year, on the other hand, the fuel administrator is not going to declare a business non-essential unless absolutely driven to it. "Even then," says the "Black Diamond," "he will withhold coal by suspending contracts—we hardly expect any cancellation of contracts—only temporarily. Therefore, a coal contract will be operative for by far the greater part of its natural life. You gentlemen, therefore, will get coal delivered as long under a contract as you will be able to buy it on the open market."

U. S. FUEL POLICY *for*

Definite Program of Curtailment Adopted at Conference in
and Clay Record" Were Present as Well as A. V. Bleininger
Fuel Administration with His Assistants. Coal Allotment
Substituted, with Provisos Which Appear on the Whole to

THAT the United States Fuel Administration's policy with regard to curtailment of production in the clay products industry has finally been determined and only awaits the issuing of formal orders, covering the various branches of the business, is the information that is available at the present date.

COPY OF ORDER NOT YET RECEIVED

A copy of the typical order which will be issued (a separate order will be promulgated for each branch of the industry) has not as yet come to hand, and in its absence, a forecast of its provisions can only be made.

In brief, manufacturers of fire brick and refractories, as well as drain tile and chemical stoneware, will be permitted to operate one hundred per cent. capacity during 1918. By chemical stoneware is meant that class of product which is used in the manufacture of chemicals, including containers, and so forth, used in their transportation.

Manufacturers of hollow building tile will be permitted to operate to seventy-five per cent. of average production during the past three years; all other branches of the clay products industry will be curtailed to fifty per cent. of average production in 1915, 1916 and 1917.

PRINCIPALS AT CONFERENCE

The above settlement developed at a conference between the United States Fuel Administration and the editors of *Brick and Clay Record,* as well as A. V. Bleininger, ceramic chemist, of the United States Bureau of Standards, Pittsburgh, Pa. Both Mr. Bleininger and *Brick and Clay Record* received a request from P. B. Noyes, director of conservation, United States Fuel Administration to be present in his office on Wednesday, March 13. Accordingly, the parties in question repaired to the capital city and upon arriving in Mr. Noyes' office were informed they had been called in an advisory capacity.

Mr. Noyes began the conference by stating that it was not the intention of the United States Fuel Administration to limit any manufacturer of "peace time necessities," in which class clay products falls, to the point where he could not take care of the actual business he had on hand. Mr. Noyes stated that it was not a question of coal supply that was involved in the curtailing of industries but it was a matter of being able to get the coal to points where it was necessary to be consumed, in other words, the whole matter resolves itself into a transportation problem. Only so much coal can be moved in 1918 and that amount will have to be apportioned upon some sort of a basis to consumers. Another phase of the transportation problem was also touched upon, namely, the moving of finished product from the plant. This Mr. Noyes said had entered very materially into the shaping of a coal policy for 1918. Labor he also said was becoming more and more a distressing problem. This involved labor at the plant as well as labor in construction work, as far as the clay products industry was concerned. He made it very clear that limiting the production of clay plants during 1918 was not only necessary because of the limited amount of coal which could be transported, but such limitation would also assist in alleviating transportation and labor conditions, where such labor and transportation are used unnecessarily.

SUBMITS PLAN FOR CURTAILMENT

At the conclusion of his remarks, Mr. Noyes presented a tentative list of percentages governing curtailment of the various branches of the clay products industry. Exception to this list was taken by those who had been called in to offer their opinion, with the result that it was altered so that no branch of the industry will be cut below fifty per cent., altho some had been scheduled for a much more drastic curtailment.

With the presentation of this list of horizontal cuts it was very apparent that *the idea of allotting coal on the basis of plant efficiency had been abandoned.*

This proposal, it will be remembered was discussed in the past two issues of *Brick and Clay Record.* It also appeared that the Fuel Administration had arrived at nothing more definite than this list of horizontal cuts.

Mr. Noyes' attention was called to the need of providing, in his orders, for operation to capacities above fifty per cent. It was shown that the government will no doubt need large quantities of building brick during 1918 for its vast construction program, and some provision should be made for allowing plants who receive these orders to operate to larger capacities than permitted under the order. This and other points were brought up by the advisors which resulted in the addition of four extra features to the typical order. Incidentally, it might be well to explain what the phrase "typical order" means. It is the intention of the Fuel Administration to send practically the same order to every branch of the industry affected but simply change the percentage of curtailment in each particular case.

CAN OPERATE IF YOU HAVE BUSINESS

The first of the aforementioned additions states, that where a manufacturer actually has orders on hand which necessitate his operating to more than the curtailed production, in order to take care of such orders he may, upon application to the Fuel Administration and submission of satisfactory proof obtain permission to operate to such capacity as is necessary to take care of the business he has on hand.

The necessity for limiting new plants was recognized and a clause was added to the order to the effect that no new plant was to be started anywhere in the United States to manufacture clay products without the projectors obtaining written permission from the Fuel Administration.

CLAY PLANTS SETTLED

Washington, D. C., March 13, at Which Editors of "Brick of the U. S. Bureau of Standards, and P. B. Noyes of the on Plant Efficiency Basis Abandoned and Horizontal Cuts be Satisfactory and Favorable Under the Circumstances

A proviso was also added to the effect that no clay plant can change the character of its product, if it has not manufacturer such product heretofore, without written permission from the United States Fuel Administration.

"POOLING"

The question of "pooling" was brought up and Mr. Noyes stated that a paragraph would be added to the order to the effect that "pooling of" manufacture would be permissible where it could be demonstrated that such "pooling" arrangement would save coal.

The question of "pooling" of distribution was also injected into the deliberation and in answer to a definite question, Mr. Noyes said that the manufacturers could make any arrangements they wish to among themselves but that each case would have to stand upon its own merits and would have to be handled separately. He admitted that in view of decreased operations and fixed overhead expense it might be necessary to increase clay products' prices. Mr. Noyes said that the United States Fuel Administration would place no prohibitive hand on such action.

OTHER FAVORABLE PROVISIONS

It was originally intended by the Fuel Administration to have the orders to be issued, dated from about March 15. Upon advice from those present, however, the orders will be dated January 1, 1918, and will cover the calendar year. They will expire on the 31st of December, 1918.

It might also be mentioned that the method of curtailment is optional with the manufacturer. While the orders will cover all types of fuel, there is no limitation as to the method used to effect economy. If a manufacturer, for instance, is operating two common brick plants at the same capacity, he may close one and operate the other "full tilt."

Mr. Noyes explained to those present that the orders would be issued under the Lever law and said that the whole plan would be presented to Mr. Garfield on the day following to receive his O. K., following which the typical order would be submitted to the Department of Justice for an opinion on its phraseology. Mr. Noyes stated that the order would be issued in from ten to two weeks following the date of the conference, which was on Wednesday, March 13. In substantiation of this statement the following letter was received from Mr. Noyes under date of March 20, addressed to *Brick and Clay Record.*

LETTER FROM NOYES

"Your letter of March 16th was promptly received, but we are not as yet prepared to release the clay products orders.

"We hope that these may be forthcoming in a day or two but as you were advised when here, it is necessary that they go thru various channels before being offered to the public."

To date, however, no copy of the orders has been received.

* * *

Fuel Orders Are Slightly Delayed

By Waldon Fawcett

Washington, D. C., March 23.—Unexpected delays covering the coal-rationing orders of the United States Fuel Administration, have held up these orders temporarily. It may be the early part of April before the instructions are promulgated at Washington that are to serve to curtail production in all branches of the clay industry.

The fact that the Fuel Administration orders have been "detained" does not mean that there has been any hitch in the proceedings or that there is any question that the instructions will come thru just about as agreed upon at the recent conference. To be sure, there are some details yet to be ironed out, and it is possible that, ere these can be finally disposed of, a further conference with men in one branch of the industry may be necessary. Generally speaking, however, any seeming tardiness in rationing the clay products industry is due simply to the press of business at the Fuel Administration these days.

In effect, the clay products industry must await its turn. There are dozens of other industries for which rationing arrangements are being worked out and in some instances the work of readjustment was undertaken before a move was made with respect to clay products. These various industries must be disposed of "in order" and while everything possible is being done to expedite matters in the office of Administrator Garfield where the final O. K. must be applied, the procession is moving somewhat slower than was calculated, in proof of which we have the situation with regard to the clay products orders.

About the time that the trade receives the long awaited coal curtailment orders, it is likely to receive in common with other industries some inside information from Washington better calculated than anything that has gone before to arouse business men to the gravity of the war situation which renders necessary this coal rationing. The officials at Washington, while they commend the spirit of co-operation manifested by the leaders of the clay products industry, are convinced that the rank and file of the trade do not begin to realize the gravity of the situation. "Industrially, we are losing this war," was the startling statement made to the writer a few days ago by Mr. Noyes, head of the conservation division of the Fuel Administration, as he sought to impress the imperative necessity that manufacturers must practice such self-denial that they can "get back behind the lines" of available coal supplies.

The new tack that is about to be taken by the Fuel Administration as a means of warning all manufacturers will take the form of advice to industrial concerns everywhere to store coal this summer against next winter's requirements—to establish a fuel reserve, as it were. The disillusionment for the manufacturer will come when, responding to this advice, he asks: "But can I store all the coal I can get or all I will need to run my plant to capacity?"

In the answer he will be initiated into the new classification just established by the Fuel Administration. Only in the event that he is a producer of the commodities that make up the first two classifications in the list (food and war munitions and supplies) will he be permitted to store coal to one hundred per cent. of requirements. If his place is on the descending scale of official consideration he will be allowed to put in reserve only a fraction of his needed fuel supplies. Thus if the producer manufactures a "peace time necessity" he may store seventy-five per cent. and if his product be a "luxury" he can put away only fifty per cent. By and large the big significance of this new twist to the war program is that it not only establishes fuel rationing for the time being but mortgages the future by the same system.

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To Urge Fuel Efficiency

Altho the United States Fuel Administration has apparently abandoned its plan of allotting coal on the basis of plant efficiency—or more particularly kiln and boiler room efficiency—Mr. Noyes made it plain to the editors of *Brick and Clay Record* at the March 13 conference in Washington, D. C., that this topic had not entirely been lost sight of. No one knows what 1918 will bring forth in the way of transportation difficulties, so fuel conditions for 1919 are very problematic.

With this thought in mind, Mr. Noyes has requested A. V. Bleininger, ceramic chemist, United States Bureau of Standards, Pittsburgh, Pa., to prepare and submit data with regard to measures that can be taken by clay products manufacturers looking toward more efficient burning. It is not the intention of the Fuel Administration to urge the installation of expensive equipment at this time, altho where capital is available it would be a very wise move on the part of clay products manufacturers who have the business to install improved kilns and other equipment designed to save coal. Where such action is unquestionably in the national interest, there is no doubt as to its advisability.

The extent, however, to which the Fuel Administration is planning to go in urging efficiency will be limited to recommendations in poster or placard form urging the placing of doors on fire boxes, the lagging of kiln crown, the liberal use of insulation on kilns, and so forth.

No definite plans have as yet been formulated for the issuing of such an appeal by the United States Fuel Administration, but it can be looked forward to with confidence at an early date.

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Effective Advertising Literature for Brick

The brick manufacturers of Georgia, thru the Georgia Brick Manufacturers' Association, have just issued a very attractive pamphlet describing the economy and durability of fire-proof houses built with brick, the pamphlet having been prepared by J. W. McMillan, a prominent brick manufacturer of Milledgeville, Ga.

The booklet contains plans and detail drawings showing how to build a residence that will be substantial, handsome, fire resistant and of low cost. The plans call for the use of hollow walls of brick, which, tho comparatively new in America, have been in use in Scotland (where the atmosphere is very damp) for generations, and always with satisfactory results to the occupants. The booklet explains how hollow brick walls make the dwelling warm in winter, cool in summer, vermin proof, damp proof and last but not least, less in cost and better than solid walls. The actual cost of brick to build each house, including loading the brick on the cars, ready for shipment, is marked plainly on each plan.

The members of the Georgia Brick Manufacturers' Association are distributing 10,000 copies of this pamphlet and will be glad to send you one, Mr. Clay Products Manufacturer, upon request.

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Pittsburgh Firm Exhibits Brick

A complete exhibition of brick, in its various forms of manufacture, is being shown by the Pittsburgh (Pa.) Brick Co., at its offices on Sixth Street. This company is the selling agent for more than forty brick manufacturing concerns in the United States, representing the larger factories in Pennsylvania and Ohio.

The exhibit of the various kinds of brick handled by this company is of interest to the prospective home builder as well as to the contractor, both from artistic and financial points of view. Color and texture are shown, with their combinations, in a manner that would require considerable travel and expenditure of time to otherwise examine. All the grades of fire clay, hollow tile and other building specialties may be seen at this exhibit.

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Labor Unions To Ask Wage Increase

Altho attempts of all building material interests are to make for harmony between employers and employes in this industry, announcements by Cleveland (Ohio) labor leaders were made this week that many labor unions will ask increased wages when agreements, which generally expire May 1, end. The average increase to be asked is 20 per cent. Increased cost of living is given as the reason. The significant effect on building operations, and the consequent effect upon brick and other materials, will not be felt, however, in the opinion of leading Cleveland interests, because it remains for banks and other financial institutions to show a greater willingness to loan money on construction before it can be improved.

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Chicago to Have Large New Warehouse

Chicago is soon to have one of the largest warehouses in the world, at 39th Street and Ashland Avenue, measuring 500x600 feet, and containing nearly two million square feet of floor space and 27,000,000 cubic feet, for the housing of Uncle Sam's army supplies. Altho the warehouse is to be of concrete, 3,000,000 common brick will be used in its construction. There will be six stories and basement, fifty miles of electric wiring and sixty miles of pipes. There will be three units in the final building; the first two are now under way, and will cost $2,800,000.

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The Steubenville (Ohio) Mantel & Tile Co., has been incorporated with a capital of $10,000 to manufacture and install mantels and tile products. The incorporators are Ross C. Anderson, J. Roy Rice, Frank M. Kettlewood, Stewart M. Richards and William McD. Miller.

COMMON BRICK *to* ORGANIZE

Seed is Planted for New Association Founded on Business Basis at Chicago Meeting, March 18, at Which Manufacturers of Common Brick, Representing Large Interests, Are Present—Herman L. Matz Presents Plan for Government Recognition of Clay Products Industry in World Crisis

FEELING that the time was opportune to take some definite steps toward getting the nation to recognize the importance of brick in the present war crisis, Herman L. Matz, of the S. S. Kimbell Brick Co., Chicago, and president of the Panama-Pacific Clay Products' Association, called a meeting of organization leaders, which was held on Monday, March 18, in the Chamber of Commerce Building, Chicago.

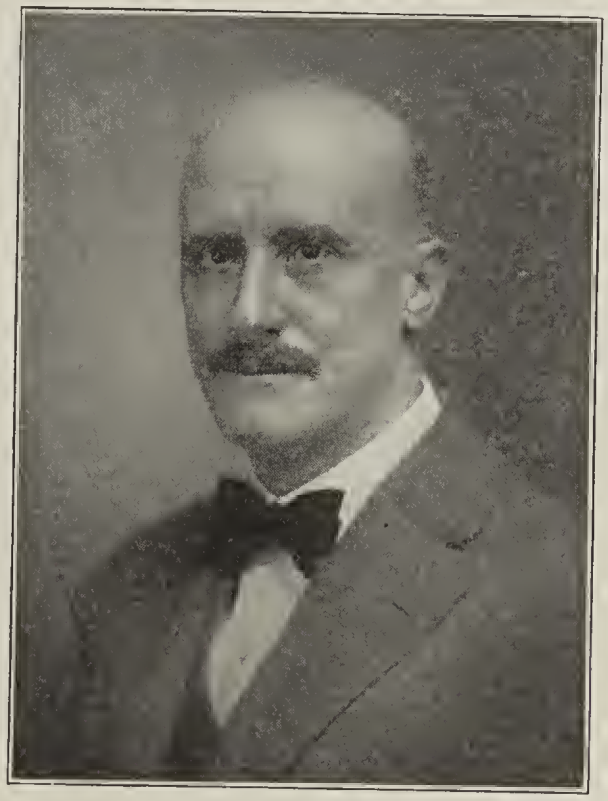
In calling together the various representatives of brick associations by wire, Mr. Matz said:

SUGGESTS OFFERING RESOURCES TO GOVERNMENT

"At suggestion of government officials yourself and secretary of your national association are patriotically urged to attend conference of officers of all national brick associations, including paving brick as suitable for building purposes, at Chicago, March 18 and 19, to unitedly offer the government thru proper channels the resources we represent actually in stock and which may be wisely manufactured in the interest of war conservation, speed, and real economy from the standpoint of war preparation. We have co-operation of International Bricklayers' Union. This should and can be made the most important meeting ever held in unselfish interest of brick."

In response to this wire, the following were present: Geo. A. Bass, St. Louis, president of the American Face Brick Association; R. D. T. Hollowell, Pittsburgh, secretary of the American Face Brick Association; F. W. Butterworth, Danville, Ill., member of the War Service Committee, American Face Brick Association; William Schlake, president, Illinois Brick., Chicago: Charles H. Bryan, Mercier-Bryan-Larkins Brick Co., Detroit, representing George Clippert, president of the National Brick Manufacturers' Association; Theo. A. Randall, secretary, National Brick Manufacturers' Association, Indianapolis; Jno. Stoner, president, Face Brick Dealers' Association of America, Cincinnati; H. Serkowich, secretary, Face Brick Dealers' Association of America, Cincinnati; Joseph W. Moulding, Thomas Moulding Brick Co., Chicago; Herman Matz, S. S. Kimbell Brick Co., Chicago, president Panama-Pacific Clay Products' Association; W. P. Varney, Hydraulic-Press Brick Co., Chicago, director, Panama-Pacific Clay Products' Association; R. B. Howard, Meacham & Wright Brick Co., Chicago, director, Panama-Pacific Clay Products' Association; E. K. Cormack, representing W. A. Fay, president of the National Builders' Supply Association; W. H. Gifford, Wisconsin Lime & Cement Co., Chicago, director Panama-Pacific Clay Products' Association; Geo. A. Olsen, executive secretary, Chicago Building Material Exchange; Will P. Blair, secretary, National Paving Brick Manufacturers' Association, Cleveland; Charles Bonner, Bonner & Marshall Brick Co., Chicago, director, Panama-Pacific Clay Products' Association; L. D. Binyon, S. S. Kimbell Brick Co., Chicago, director, Panama-Pacific Clay Products' Association; H. H. Rosenberg, V. P. and Gen. Mgr., and E. G. Zorn, Editor of *Brick and Clay Record.*

The meeting was called to order at 10:30 a. m., Monday morning of March 18. This session was informal in nature but proved to be quite interesting, for subjects of vital interest, particularly pertaining to the common brick branch of the clayworking industry, were discussed. The fuel situation was also gone over.


HERMAN L. MATZ
The Able Chairman of the Chicago Meeting

CARPENTERS NEEDED TO BUILD SHIPS

The delegates adjourned for lunch to meet again in the afternoon at 2 p. m., when Chairman Matz made a brief statement as to the present situation which faces the brickmaking industry. He called attention to the folly of using carpenters to build homes of wood when both the carpenters and wood are badly needed for shipbuilding—certainly the carpenters are. He expressed an opinion to the effect that something should be done to impress upon the government the great opportunity which lay in the brick plants of the country, which are now equipped to take care of any volume of business, and which together with the idle bricklayers could be utilized to build far more permanent and safer homes and thereby release large quantities of carpenter labor for shipbuilding.

This subject, as presented by Chairman Matz, was very thoroly discussed, but it soon developed that nothing could really be accomplished until every branch of the brickmaking industry was organized to effectively handle the situation.

It was pointed out that while face brick, paving brick, hollow tile and other branches of the clay products manufacturing industry, were well organized with authority to obligate the members of such associations to whatever extent was deemed necessary in the promulgating of a common plan to force a recognition of the value of clay products in the existing crisis, *the common brick industry was thoroly disorganized,* for the most part, and was a monkey wrench in the machinery. It was the positive opinion of nearly every one present that the common brick industry ought to get busy and organize a *business* association as quickly as possible. This, it was stated, was the first step necessary toward the carrying out of a plan such as advocated by Chairman Matz.

SOON TO HAVE REAL COMMON BRICK ASSOCIATION

After a very earnest discussion, the common brick manufacturers present decided to proceed with such a plan *and it will not be surprising if before very long a real common brick association, comprising the leaders in that branch of the industry, is formed.* The mistake of attempting to gather in every common brick manufacturer, regardless of capacity, was recognized. Instead of attempting to get in ninety per cent. of the common brick manufacturers, a determined drive will be made to secure the affiliation to ninety per cent. of the production of common brick in the United States.

Conservatively speaking, the meeting at Chicago on Monday, March 18, accomplished more in the interest of common brick than has been accomplished in a good many years. Realizing the impossibility of attempting to proceed with Chairman Matz's plan, until the new common brick association can be formed, the meeting adjourned sine die, and extended over one day, instead of two, as had been planned.

Further details with regard to the proposed new common brick association, will be forthcoming as developments take place. *Any common brick manufacturer interested in knowing exactly what is being done in the way of forming a new organization on a business basis is urged to get in touch with Wm. Schlake, President, Illinois Brick Co., Chicago.*

* * *

Paving Brick Makers and Good Roads Bodies Unite For War Roads

What may be considered the first definite step toward obtaining improved roads in Ohio, to meet the press of war time conditions, and at the same time possibly forestall prohibitive prices to consumers for all commodities thru the improved transportation that is expected to result by this better road construction, was taken at Columbus, Ohio, recently when the Ohio Good Roads Federation, the Ohio Engineering Society, the County Commissioners' Association and state officials met in conference.

The principal speaker at the three day conference was Will P. Blair, secretary of the National Paving Brick Manufacturers' Association of Cleveland. Mr. Blair emphasized the fact that the highways of the state may be considered the link of interdependence between the industries of Ohio and the consuming population. He pointed out that the highways must soon be one of the principal, if not the main, methods of bringing products of industry to the consumer, and this he claimed could only be accomplished by highway improvements. Governor Cox, Fourth Assistant Postmaster James L. Blakesley, and L. G. Tabor, president of the State Farmers' Grange, also spoke. The significance of the gathering, in the opinion of Mr. Blair, was the large number of auto-truck people, farmers and others who will be vitally affected by any move made along the lines suggested.

The National Paving Brick Manufacturers' Association has not stopped at making a strong appeal for the war roads. A recommendation that the good roads building program be increased this year as a means of solving the transportation problem, has been forwarded to federal authorities by the war service committee of the association. This action was considered proper following the request of the organization for a statement as to the ability of members to burn less coal this year. Representatives of the organization who met in Cleveland declared that the paving brick manufacturers should increase their activities this year, not reduce them.

This contention is reflected in the additional statement of Mr. Blair. "As the war progresses," he points out, "American industry will be asked to increase its output. Already the railroads have proved they are unable to handle all the freight that has been sent to them during the war to date. Increased output of industry means increased freight. An already congested railroad system cannot be relied upon exclusively to handle the freight. The solution is in the opening of an auxiliary transportation system by improvement of the highways in such a manner that they will be available to motor truck transportation all year round. If motor truck lines had been operating over improved highways this winter, from the mines to Cleveland, we would have had plenty of coal."

* * *

Chicago Section Elects Permanent Officers

Having been granted a charter, the Chicago Section of the American Ceramic Society proceeded to perfect its organization at its meeting at Champaign, on Thursday, March 14. Permanent officers were elected as follows: W. D. Gates, president of the American Terra Cotta & Ceramic Co., Chicago, to continue as president of the section; I. E. Hardy, of the Tiffany Enamel Brick Co., Momence, Ill., vice-president, and F. B. Ortman, of the Northwestern Terra Cotta Co., Chicago, Ill., secretary-treasurer, to succeed F. L. Steinhoff, associate editor of *Brick and Clay Record,* Chicago, who waived renomination to that post. Professor C. W. Parmelee, of the University of Illinois, Urbana, was chosen as counselor; Professor R. K. Hursh, of the University of Illinois, Urbana, as chairman of the program committee, and J. K. Moore, of the Streator (Ill.) Clay Manufacturing Co., and the Monmouth (Ill.) Clay Products Co., as chairman of the membership committee.

The Chicago section met in conjunction with the Illinois Clay Manufacturers' Association at Champaign, and enjoyed a very interesting and instructive meeting. It is expected to have a big meeting in Chicago during May when an excellent program will be submitted.

INCREASED EFFICIENCY *thru* PROPER FURNACE CONSTRUCTION

This Article Discusses in Detail Important Points in Firebox Construction and Gives Some Valuable Information on How to Build Furnaces so that the Greatest Efficiency is Obtained.

By Carl B. Harrop
Professor of Ceramic Engineering, Ohio State University,
Columbus, Ohio

THE BURNING OF CLAY WARE involves the largest single item of cost in its manufacture. At the completion of this process, we have a first quality article, a "second" or a "cull" or waste. If waste, (or in some cases a cull), we have lost not only the cost of burning it, but the cost of the clay composing it, the cost of preparing the clay, forming, drying and handling it and finally the cost of getting rid of it.

The furnace is one of the vital parts of a kiln. It may be economical or wasteful of fuel; it may be easily handled or its operation may be more or less unmanageable. There may be an insufficient number of furnaces to meet the kiln temperature requirements or the fuel bed may not be properly located with reference to the kiln floor line.

There are a number of things which govern the selection of a suitable type and design of furnace for a specific purpose, chief among which are:

a Kind of ware and requisite conditions of its burning (control of color).
b Burning peculiarities of the clay (tendency to flash, vitrification range, etc.).
c Kind of fuel (its size, quality, ash content and slagging tendency).
d Kind of kiln.

NUMBER OF FURNACES PER KILN

In the ordinary round down-draft kiln, the furnaces are usually evenly spaced around the circumference. As one or two doors, of sufficient width for cars or barrows, must be provided between furnaces, their minimum spacing is, therefore, fixed as well as the maximum number that can be built. The prevailing custom in the construction of porcelain, pottery and sanitary ware kilns is to allow one furnace for each twenty to twenty-four inches of kiln (inside) diameter. In terra cotta kilns, one furnace is usually provided for each twenty-four to thirty inches or muffle diameter.

The ideal method of applying heat to the kiln setting would consist of a continuous sheet of flame and hot gases passing over a continuous circular flash wall. As this, for several reasons, is not feasible, the nearest we can approach to this condition is to make the furnaces small and place them as close together as possible. The objection to this is that it would require more work to take care of say sixteen furnaces than it would ten, even tho the total grate area were the same. Furthermore, the cost of construction would be greater and as the furnace temperature would be the same in both cases, the cost of repairing the sixteen small furnaces would be greater than for the ten larger furnaces. It is probably for the reason last stated, that thirty-two foot diameter kilns for burning silica and magnesite brick at some of the most recently constructed plants have but eight furnaces. In fact, it is reported that at one silica brick plant thirty-eight foot diameter kilns are provided with but eight furnaces. However, in some of these kilns, the furnace arches last but four burns and the cost of repairing eight fair sized furnaces is undoubtedly less than re-

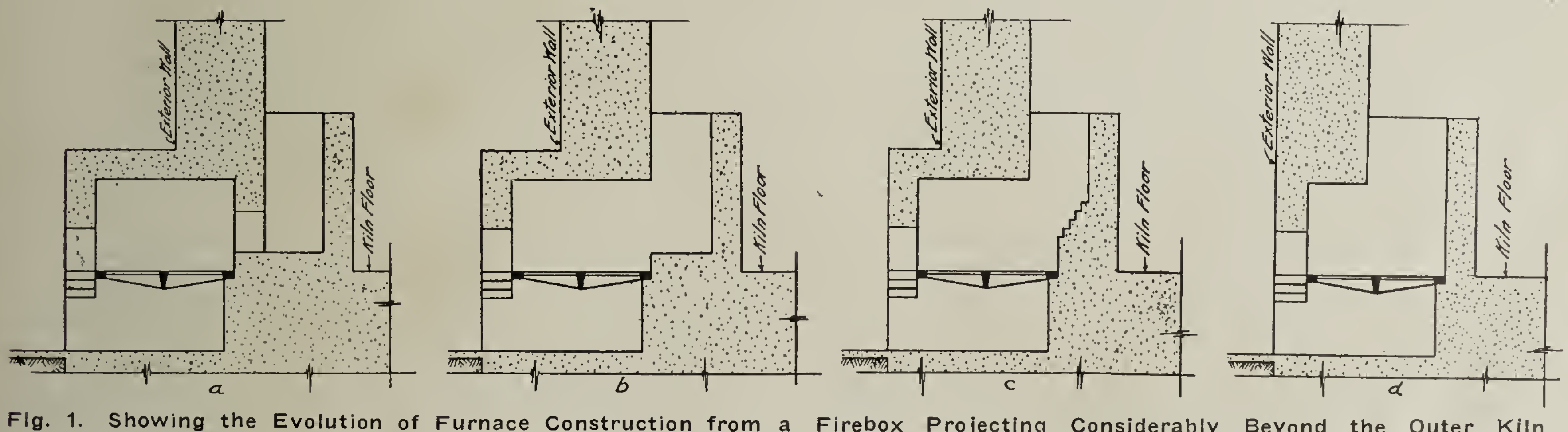


Fig. 1. Showing the Evolution of Furnace Construction from a Firebox Projecting Considerably Beyond the Outer Kiln Wall and with a Restricted Throat to That of a Firebox Not Protruding from the Wall and the Throat Removed.

pairing, say sixteen or even fourteen furnaces only about one-half as large.

In ordinary practice, with the common round down-draft kilns, we usually provide furnaces as follows:

38-40-42 foot diameter kilns	14 furnaces
34-36 foot diameter kilns	12 furnaces
28-30-32 foot diameter kilns	10 furnaces
26 foot diameter kilns	8 furnaces

For rectangular down-draft kilns, the usual spacing of the furnaces is from six feet six inches to eight feet center to center.

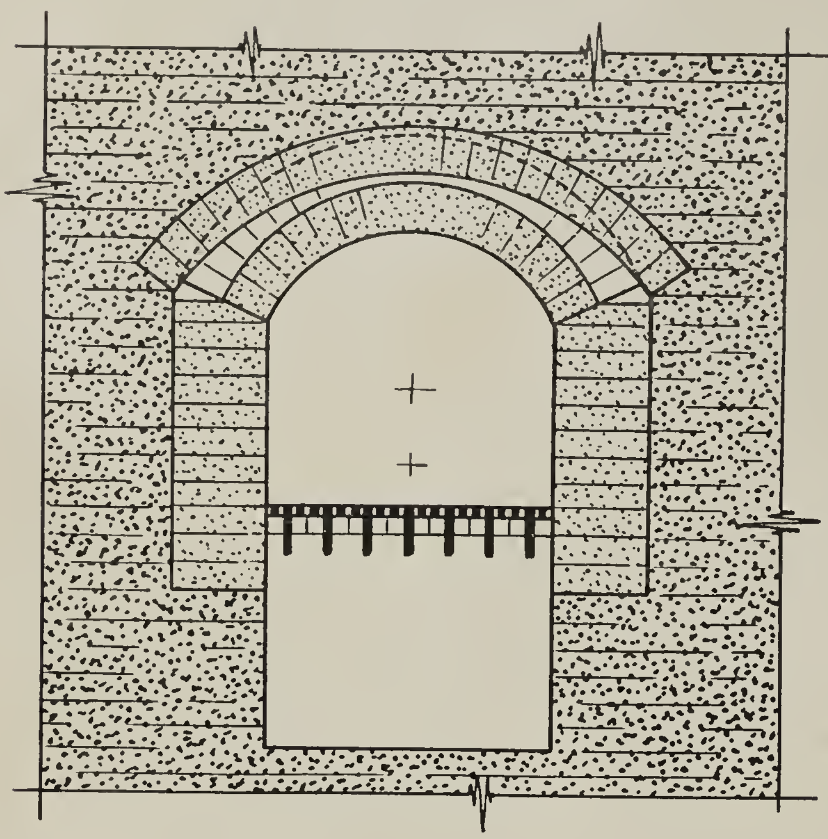


Fig. 2. Showing How An Air Space Is Provided for Between the Lower, or Fire Arch and the Arch Supporting the Main Wall.

SIZE OF FURNACES

Of more importance than the number of furnaces is the total amount of grate area required. The greater part of the heat generated in a kiln is used or lost in the following several ways: first, a certain amount is used in raising the temperature of the ware, in drying and dehydrating it and in effecting the pyrochemical changes incident to vitrification; second, a considerable amount leaves the kiln in the combustion gases, passing up the chimney, and third, a large portion is required to heat the kiln structure and the ground under the kiln and is lost in radiation and convection from the exterior of the kiln. The higher the kiln temperature, the greater will be the second and third mentioned losses, which are a constant drain on the kiln and it is these losses, which steadily increase with increase in kiln temperature, that make it so difficult to effect an accumulation of heat in the kiln and, therefore, a rise in the temperature of the ware.

With these facts in mind, it is evident that the real function of probably two-thirds or even three-fourths of the furnace capacity of a kiln is to provide heat for these continuous losses while the remaining one-third only serves to increase the kiln temperature. It is not uncommon to have a kiln reach a certain temperature, say two or three cones below the desired finishing temperature and then refuse to go any higher. Even under the handling of the head burner, the kiln may "hang" for several days and finally be given up. What is the explanation? In general, it may be said that all the heat generated was used to supply the heat losses and there was not sufficient furnace capacity to supply that additional heat, which was so vitally necessary to raise the kiln temperature.

RULE FOR CALCULATING GRATE AREA

It is therefore imperative that an abundant furnace capacity or grate area be provided,—enough for even the most unfavorable weather conditions. For calculating the proper amount of grate area under various requirements of kiln temperature and heating value of fuel, Mr. Ellis Lovejoy has suggested the following rule: "On the basis of 13,000 B. t. u. fuel and kiln temperature of cone 1, the total square feet of grate area for a kiln shall be 1.5 per cent. of the available cubic feet of setting volume in the kiln. For each additional cone, increase the grate area 0.05 per cent. If a coking table is used, one-half its area should be considered as grate area. For inclined grate bar furnaces substitute 0.8 per cent. for the 1.5 per cent. in the above rule. If the heating value of the fuel is less than 13,000 B. t. u., the grate area should be proportionately more.

It has been generally believed in the past, that combustion should take place within a fire-box of rather limited size, (altho it might easily be made too small). The earlier down-draft kilns, as a rule, had restricted throats or openings into the kiln, which involved considerable projection of the furnace beyond the kiln outer wall. In later kilns this restricted throat was removed, which at the same time, reduced the furnace projection on the outside. In modern kilns, the grate bars extend in to the bag wall or bag wall foundation, the furnace being completely within the kiln knob. Fig. 1 (a, b, c and d) shows the evolution of the furnace in this particular. In some kilns for high temperature ware, recently visited, at least half of the length of the grate bars lies inside the kiln. The furnace does not protrude from the outside, notwithstanding the fact that the kiln does not have a hob and the wall is but 27 inches thick. This tendency to set the furnaces farther into the kiln has resulted in less furnace radiation and a simpler and more regular exterior construction around the kiln knob, altho possibly there has been the disadvantage of a small reduction in the setting space in the kiln as a result of enlarging the bags.

TYPE OF WARE DETERMINES KIND OF COMBUSTION

There are three essentials for perfect combustion: there should be sufficient air to supply the necessary oxygen; there should be a good mixture of the air and combustible gases and the mixture should be brought to a relatively high temperature. The partially enclosed combustion chamber or fire-box is generally supposed to assist in effecting the last above mentioned requirement. However, it should be stated that for wares burned at from cone 16 to 20, the fire-boxes are usually large, combustion does not all take place within them (nor, in fact, does it all take place even within the kiln, but in a considerable amount, it does take place at the top of the stack) and it is doubtful if it is desirable that all the combustion should take place within the furnace, for in that case, the enormous heat generation within the furnace would be very damaging to the lining and arch and this furnace heat would have to be transferred to the ware principally by convection. By not permitting complete combustion to take place within a restricted furnace space, excessive damage to the furnace is prevented and a part of the gases burn upon striking or shortly after striking the surface of the kiln setting. In other words, the principle of "Surface Combustion" is undoubtedly made use of in reaching these high kiln temperatures. On the other hand, where wares are to be burned without flashing, combustion in contact with the ware is to be avoided, so that complete combustion, as nearly as possible, should be effected within the furnace and the heat generated within the furnace carried to the ware by convection (and to a small extent by radiation).

TYPES AND CONSTRUCTION OF FURNACES

Altho there are numerous modifications, there are but three fundamental types of solid fuel kiln furnaces: horizontal grate bar, inclined grate bar and grateless or dead-bottom.

Undoubtedly the horizontal grate bar furnace is the one best suited to wares requiring careful heat control and oxidizing conditions. This furnace can be operated over a wider range of conditions than any other, but on the other hand, it requires the closest attention, as the kiln atmosphere and temperature conditions will change more quickly from neglect or careless handling of this furnace than with any other. Unless carefully and constantly watched, there is a tendency for thin places to develop in the fuel bed, followed by holes, which result in excess air readily finding its way thru the grates and attendant loss of heat and waste of fuel.

More fuel can be completely consumed in a horizontal grate bar furnace than in any other type. It is possible that more fuel can be used in an incline grate bar or even some grateless furnaces, but a large part of the volatile hydrocarbons and CO have to seek oxygen for combustion after leaving the furnace. It is the oxygen in the air which supports the combustion of the fuel (both solid and gaseous) and the thinner the fuel bed, the greater will be the amount of air passing thru. Of course, for combustion of the solid fuel, it is essential that the air come in actual contact with the hot fuel, therefore, the fuel bed must be so thick that with a given draft power, a maximum amount of air will pass thru the fuel bed and at the same time, the excess of unnecessary air be a minimum. The coarser the fuel, the thicker must be the fuel bed to meet this condition and vice versa. Usually the fuel bed will be six inches to eight inches thick for bituminous coal.

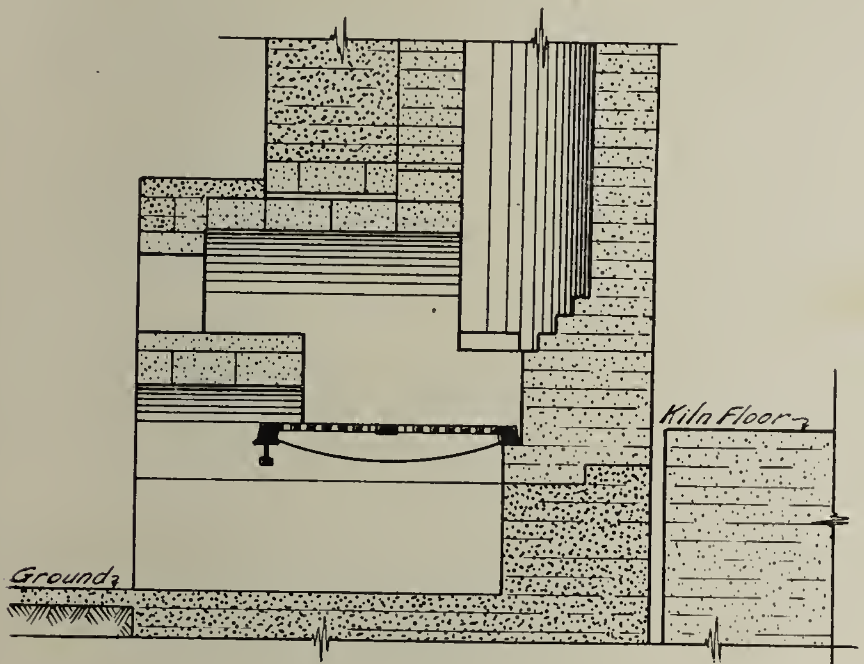


Fig. 3. Portraying the Use of a Coking Plate Elevated Above the Grates, to Prevent Incomplete Combustion of the Coal.

CONSTRUCTION OF FURNACE ARCH

The furnace arch should rise twenty to twenty-eight inches above the grate bar level, depending somewhat upon the other structural details of the furnace and possibly also upon the fuel used. The raise of the arch above its spring line, in proportion to the span, varies from one-fourth to one-half. This arch may drop or step down as it passes toward the inner part of the kiln. Thus, the gases will be held down near the fuel bed and will be forced to brush against the hot surface of the arch before passing out into the bag.

For average kiln temperatures, this arch may be laid up of arch brick (or by some, called 'side-arch' brick), making a single rowlock arch 4½ inches thick, which can be replaced. For very high temperatures, this arch had better be 9 inches thick and laid with wedge brick. Above this arch should be another, 4½ or 9 inches thick, to support the weight of the kiln above the furnace and prevent the load from resting on the lower or fire-arch.

As considerable expansion, due to the high temperature, will take place in the furnace lining and arch, there will be a tendency for the fire-arch to lift the kiln wall up at that level. This lifting is often so pronounced that one can easily lay his fingers in the horizontal cracks appearing between the furnaces. This may be prevented, if a space of three-fourths to one inch is left between the lower, or fire-arch and the arch supporting the main wall as indicated in Fig. 2.

The lining as well as the fire-arch of all furnaces should be of No. 1 quality fire brick. In the case of grate bar furnaces, the No. 1 quality brick should extend at least three courses below the top of the grates. One header course to not to exceed two stretcher courses is recommended for the furnace lining, which is not bonded to the main wall. The mortar joints of the lining and arch should be as thin as possible, consistent with securing a perfect bedding of the brick. Each brick should be moistened, dipped in the thin fire clay mortar and slid into place, being pounded to a solid bedding with a wooden mallet. Finely ground fire clay should be used in the mortar and it should preferably be the same clay as that used in the manufacture of the brick being laid. This mortar should have the consistency of thick cream. The use of the trowel and spread joints should not be tolerated. Undoubtedly more repair work results from poor fire brick laying than from poor fire brick.

ADVISES USE OF COKING TABLE

One of the most common practices on kiln yards is for the fireman to throw several scoops of green coal into the furnace, directly upon the bed of hot coals. What is the result? An immediate evolution of a great volume of combustible hydrocarbons occurs. This green coal cools the fuel bed and also, by reason of the thicker fuel bed, the passage of air thru the grates is retarded, all of which results in waste due to incomplete combustion, a temporary lowering of the furnace temperature and the production of great volumes of smoke emitted from the stack and possible damage, due to flashing, inside the kiln.

To overcome this trouble, a coking table may be built into the front of the furnace, either on a level with the grates or elevated about 12 inches, as indicated in Fig. 3. The green coal is charged onto this table, where the heat of the furnace gradually heats and cokes it. This results in the hydrocarbons coming off at such a slow rate that they can find sufficient oxygen in the excess air coming thru the main fuel bed to effect complete combustion. When coked, the fuel is pushed off onto the hot fuel bed and spread out. This does not have a great cooling effect and as the evolution of hydrocarbons has already been accomplished, it remains only to consume the carbon in the coke.

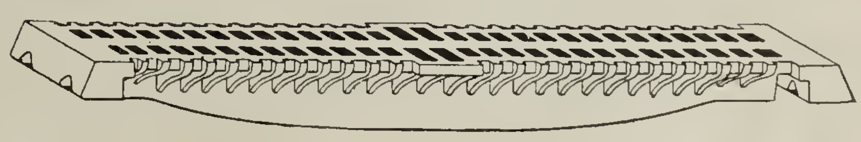


Fig. 4. This Is a Type of Grate Bar Used for Horizontal Furnaces and Which Has Given Very Good Results.

Horizontal grate bars should not be placed at a higher level than the kiln floor. They are made of cast iron or wrot steel. Cast bars are much preferable, as the grate openings can be made in any desired size and arrangement to suit the various grades and sizes of coal. A strong, well designed bar is cheaper in the end than a light one, in which it has been attempted to decrease first cost. A grate bar should be well ribbed, not only in a vertical plane to prevent undue sagging, but also it should be made wide enough to prevent its becoming crooked. Fig. 4 shows a pattern which has given good satisfaction.

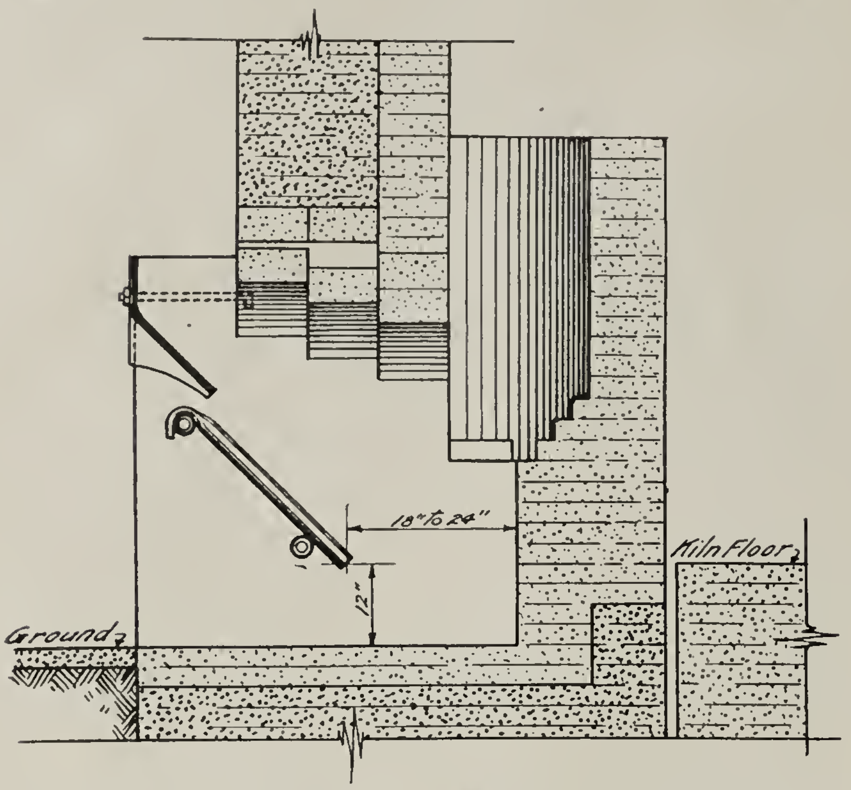


Fig. 5. An Arrangement Such As Is Shown Here Serves As a Storage Hopper and As a Charging Door, Effectively Closing the Mouth and Preventing the Influx of Air Over the Fuel Bed.

Considerable fuel loss often occurs by reason of unburned coal dropping into the ash pit thru grates which are too coarse. Fine coal should be burned on grate bars with small openings. On the other hand, even fine coal, which tends to cake, can be handled very economically on coarse grates.

The bearing bars for horizontal grates may be cast iron, structural steel shapes or T rails. The inner bearing bar can be eliminated if a ledge is constructed in the furnace lining (or bag wall foundation), as indicated in Fig. 3.

PROPER HEIGHT FOR GRATE BARS

The distance from the top of the grate bars to the bottom of the ash pit should be from eighteen to twenty-four inches—preferably the latter. It is best to have the bottom of the ash pit level with the firing pit, as the ashes can be more readily removed, altho if for any reason it is not desirable to have the firing pit so far below the kiln floor, (or grate bar level), the ash pit may be depressed six inches or even more below the firing pit. In this latter case, the depression can be filled with water, the vapor from which tends to keep the grate bars cooler, preventing their distortion and materially reducing the amount of clinkers formed on the grates.

The coking table arch should begin at the outside of the furnace, the front wall being partly supported by this arch. The charging opening should be about twelve inches by fifteen inches, with an arched or single clay tile lintel. The ash pit opening below the coking table arch, should be the full width of the furnace and need not be provided with a door, the draft being controlled by a main-flue or stack counterdraft opening. The charging door may be hinged at the side or top; it may slide sideways on a track above or below the charging opening; it may raise vertically by means of counterweighted cable, or it may be supported by chain or cable from above and swung to one side. If properly designed and erected, any of these methods will be satisfactory. The door may be built up of steel; it may be cast iron or it may be constructed of fire clay brick or block, bound together around the outside with strap iron, or the fire clay shapes may be set into a cast iron frame. The steel door is not generally satisfactory. The cast iron door is more satisfactory, but unless protected on the inside from the heat, will warp in time and finally crack. The fire clay door, while at first thought more practical, is usually heavy and unwieldly and with the rough handling characteristic of the clay plant, will be leaky and out of repair a good part of the time.

INCLINED GRATES USED WIDELY

The inclined grate bar furnace is widely used and is quite satisfactory for clays or wares, which are not detrimentally effected by flashing. It is more difficult to maintain oxidizing conditions with this furnace and for this reason, it is used largely for burning flashed wares, or for burning wares in which flashing is not objectionable. Also, it is used for salt-glazing, since the thick fuel bed is not so susceptible to the cooling action of the salt and the fused salt does not run thru so easily and close up the grate openings, as is apt to happen with the horizontal bars.

In this type of furnace, which is usually about twenty-four inches wide, feeding of coal into the combustion chamber is more or less continuous and at the same time it passes thru practically the same progressive steps as in the case of the horizontal grate bar furnace with coking table. The fuel bed is much thicker than is customary with horizontal grates and as the fuel is consumed, gravity aids in closing up the holes, thus preventing the entrance thru the fuel bed of any large amounts of excess air.

By an arrangement of the masonry, or by the use of an iron chute, the mouth of the furnace may be so constructed as to serve as a small storage hopper for the fuel, Fig. 5. This arrangement also serves the purpose of a charging door, effectively closing the mouth and preventing the influx of excess air over the fuel bed.

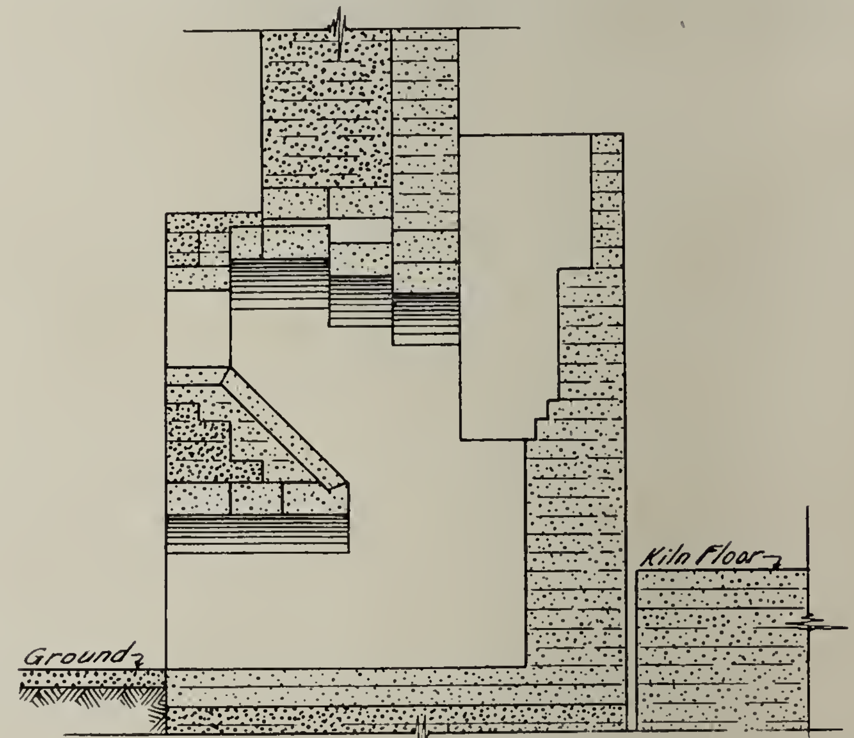


Fig. 6. A Grateless or Dead-Bottom Furnace. This One Shows an Inclined Arched Support for Freshly Charged Fuel.

DETAILS OF GRATE BARS

The inclined grate bars are made of steel (about ⅝ inches by 2 inches, laid flat), 1½ to 2 inches diameter iron pipe, flattened and bent into a hook at one end, or they may be of cast iron. It is difficult to maintain the spacing of the steel bars. The pipe, when flattened at one end, increases in width at that point and gives a uniform spacing at the upper end, altho there is nothing to maintain the spacing at the lower end. All of these bars are attacked by the heat and slagging action of the ash at the lower end. Altho cast iron is probably better able to resist this action than the other materials, several schemes have been evolved to reduce the upkeep expense of this type of grate. At one plant, the cast bars have a notch on the under side about ten inches from the end, which engages the upper bearing bar. This notch is in each end and when the lower end burns off, the bar is turned, end for end, which practically doubles the life of the bar. Another bar has been designed, which has a renewable lower end or tip, which is secured to the body of the bar by a steel pin.

These bars are 28 to 32 inches long and are placed at an angle of 30 to 50 degrees, usually about 45 degrees. Sometimes one of the kiln bands is used as the upper bearing bar.

What has been said of the inclined grate bar furnace in regard to reducing conditions and flashing, applies in even greater degree to the grateless furnace. The fuel bed is necessarily thick, resulting in its acting in a measure, like a miniature gas producer. There is undoubtedly less loss in the ash from this type than from the grate bar furnaces, as all the fuel remains in the fuel bed until consumed.

Grateless or dead-bottom furnaces are built in several ways. There may be no support whatever for the fuel bed, except the bridge or inclined layer of clinker which forms. In this instance, coal with a rather high per cent. of fusible ash is necessary. Some designs include a single horizontal or inclined arched support in the front of the furnace for the freshly charged fuel, which is later pushed off onto the fuel bed proper, Fig. 6.

Another form has a double support, consisting of two separate arched tables. This arrangement (Fig. 7), probably enables a greater amount of air to pass thru the fuel bed and also facilitates in the stoking. This furnace may have a brick front, with charging opening or a metal charging hopper, as mentioned for inclined grate bar furnaces.

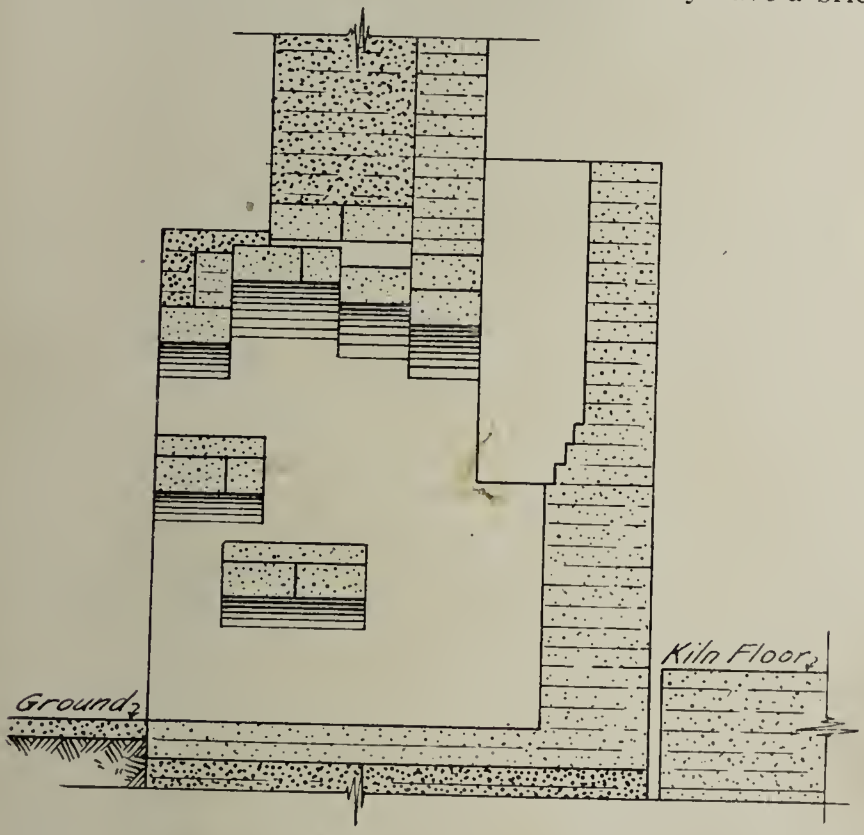


Fig. 7. Showing a Dead-Bottom Furnace With Two Separate Arched Tables. This Arrangement Probably Enables a Greater Amount of Air to Pass Thru the Fuel Bed.

The bottoms of both the inclined grate bar furnace and the grateless furnace are usually on the same level as the kiln floor. However, if the kiln floor is 12 inches higher than the bottoms of these furnaces, better burns will likely be had.

BAG WALLS

Considered as a part of the kiln furnace, a few words may be said regarding the bags. The bag wall, like the furnace lining, should be constructed of No. 1 quality fire brick and usually should be nine inches thick, altho in some cases it would be permissible to reduce the upper part to 4½ inches thick. By virtue of its inherent rigidity, the semi-circular form retains its shape better than the rectangular form, which tends to draw in towards the furnace at its middle part. The semi-circular bag is usually built to an inside radius of eighteen inches, the center being on the inside line of the kiln wall. The space inside the rectangular bag is from twelve to twenty-four inches wide. Both forms of bags, after repeated burns, tend to lean in toward the center of the kiln. This results in a wedge-shaped crack between the bag wall and the kiln wall, wide at the top and tapering to a point at the bottom. Some of the flame from the furnace will go out thru these cracks instead of going over the top of the bag wall, if the cracks are not filled up and daubed before each burn. To remedy this a 4½ by 9 inch pilaster (Fig. 8), may be built into the kiln lining on each side of the bag, extending from the floor to the top of the bag. The bag wall can then lean out several inches at the top before developing cracks, thru which the flames can short-circuit to the floor openings.

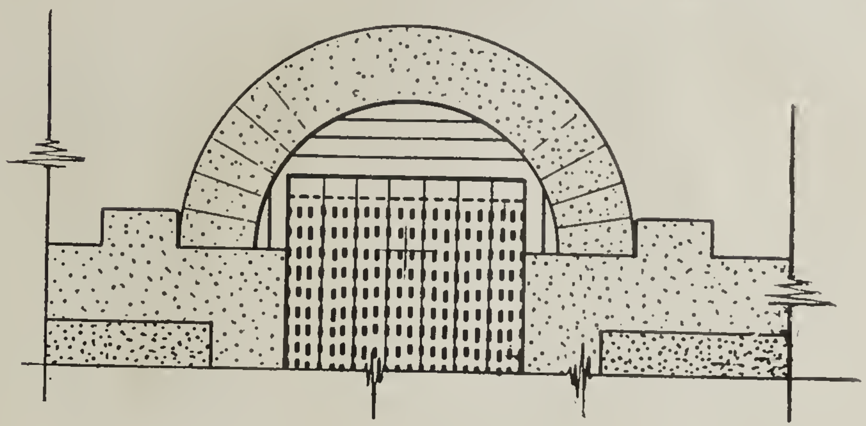


Fig. 8. A Plan View of a Firebox and Bagwall Showing How to Prevent Flames from Shooting Thru Cracks Between the Bagwall and Kiln Wall, by Building a Pilaster as Indicated on Drawing.

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Firebrick—New Researches

Messrs. Le Chatelier and Bogitch have been engaged in researches upon fire brick and the best makeup to be employed in order to secure the best results, reports "Scientific American." Such fire brick is composed of granulated silica and various oxides in powder used as a binding material. They find that the best binding substance is impalpable quartz powder which is produced in special crushing mills. The use of this powder considerably increases the strength of the brick at a high temperature of 1,600 degrees C., and this is one of the most important qualities of fire brick. Again, the proportion of 25 per cent. of the powder gives much better results than 75 per cent., for when too much of it is employed the brick all show small cracks after heating, which will of course become larger under a long heat. The best makeup for paste is one-quarter of impalpable quartz powder with grains about one-hundredth of a millimeter, and three-quarters of large quartz grains not above five millimeters in size.

SEVEN ASSOCIATIONS CONVENE *at* CHAMPAIGN

Fortieth Annual Meeting of Illinois Manufacturers Proves to be Exceptionally Interesting and Instructive

"THIS IS THE LIVELIEST CONVENTION that I have attended this season" was the remark made by several of the men who had attended several other state and national conventions and were present at the fortieth annual meeting of the Illinois Clay Manufacturers' Association, which was held at the Beardsley Hotel, Champaign, Ill., on Wednesday and Thursday, March 13 and 14. A count taken at the banquet tables on Thursday revealed the presence of forty-one guests and no doubt many more would have been present had they known of the good things in store for them, at an earlier date.

Each of the following organizations, who met in conjunction with the state association, had a good representation: Illinois-Indiana Division of the American Face Brick Association, Illinois Paving Brick Publicity Bureau, Illinois Drain Tile Manufacturers' Association, Indiana Face Brick Club, Indiana Drain Tile Manufacturers' Association, Indiana Brick Club, and the Chicago Section of the American Ceramic Society.

The association's aggressive secretary, Professor C. W. Parmelee, arranged a program of exceedingly interesting subjects, embracing a variety of topics ranging from labor and fuel problems brought about by the war, to the manufacture of clay products from a technical consideration, such as burning, drying and other plant subjects.

The convention was called to order promptly at 9:30, on Wednesday morning, by Douglas F. Stevens, the energetic president of the association, who delivered a brief address telling of the growth of the association, outlining an extensive program of work for the coming year, and expressing the wish that the visiting organizations would meet with the association each year. He then called upon the chairman of the cost accounting committee, D. C. Haeger, to give a report. Mr. Haeger stated that he had helped several plants with their cost systems but was looking for suggestions as to a better way of arriving at costs quickly. He further stated that it was more necessary now than ever before to keep the books of a clay plant in good order because of the higher cost of fuel and labor, which made it necessary to keep in touch with production costs so that a proper selling price could be determined. According to Mr. Haeger, when strikes occur on a brick plant and no books are kept, the settlement is invariably in favor of the men.

TIMELY TOPICS DISCUSSED

The first paper on the program was that read by Professor M. H. Robinson on "Wages and the Cost of Living." He showed the large rise in cost of living for the laborer now, compared to several years ago and stated that where a man was earning $800 in 1910 he would require $1,177 in 1917 if he followed the same standard of living. This paper was followed by a lively discussion on general labor and wage conditions, in which many took part.

The economy of a producer gas-fired metallic radiation dryer was the text of a paper read by E. J. Anderle, of the International Clay Machinery Co. This paper was based upon the data obtained by Professors Hursh and Parmelee, of the ceramic department of the University of Illinois, during an investigation of a dryer of this type.

The next paper was an exceedingly interesting one. It was entitled: "Some Ceramic Notes" and was prepared by Professor Parmelee. The outstanding feature of this paper was the curve sheet showing how, at the same temperature, a lower porosity could be obtained with a shale by burning under reducing conditions. A discussion which took place after the reading of this paper revealed that some plants noticed a saving of as much as ten per cent. in fuel requirements when burning under reducing conditions.

"Fuel Consumption in a Gas-Fired Chamber Kiln" was the title of a paper read by Professor R. K. Hursh. He showed how the heat in a continuous kiln was distributed into various phases such as stack gases, radiation loss, ware, etc., giving the per cent. of distribution in each case. The economy of a gas-fired chamber kiln by virtue of its low radiation loss, was also pointed out.

Dr. E. W. Washburn, head of the department of ceramics at the University of Illinois, gave a review of the important part played by the ceramic industries in the war. He indicated that the optical glass, enameled iron, porcelain, and refractories industries especially were doing very important work.

COAL COSTS

The chairman of the conservation committee of the United States Fuel Administration in Illinois, Professor H. H. Stoek, gave a talk on coal problems. He stated that coal was costing about $60 a ton in Italy, $30 a ton in France, and $9 to $10 a ton in London, England. He warned every one present of the great shortage which will occur again next winter and even went so far as to predict a card rationing of fuel during the coming winter. Reviewing the shortage which occurred last winter, he stated that there were three important reasons for its occurrence. They were: the failure on the part of coal operators and companies to realize the fuel needs; the failure of the railroads to handle the situation, and the indifference of public men in informing public interests. However, more properly stated, the reasons for the shortage were really due to poor transportation facilities; the failure on the part of consumers to store coal; the increased demand for coal, and the unusual weather conditions which prevailed during January and February. It was also brought out in this talk that the average coal car makes only fifteen trips to the mine during the entire year. The capacity of a car, however, has been increased so that it averages forty-seven tons now, while heretofore, it averaged only thirty-seven tons per car. Prof. Stoek advised every manufacturer to store a large quantity of fuel during the coming months so as to protect himself from a shortage which is quite certain to occur again.

COAL STORAGE PROBLEMS

The above mentioned paper aroused a great deal of interest and every one was anxious to obtain data on how to store coal. Mr. E. A. Holbrook, of the United States Bureau of Mines, then proceeded to give some information on this topic. The main points that he emphasized were that when storing coal, the pile should be either air tight, by being submerged in water or being thoroly well tamped, or it should be thoroly aeriated. Mr. Holbrook also stated that in many cases it was possible to effect economy by changing to a different kind of coal, by throwing out impurities, and by a closer regulation of the air supply.

T. N. McVay, superintendent of the Streator (Ill.) Brick Co., followed with a paper entitled "Fuel and Its Relation to the Color of Face Brick." This paper told how different colors of brick were obtained by a certain regulation of the fuel bed and kiln atmosphere. The pyrometer and settle measurements were shown to play a very important part in the regulation of the kiln and heat so that certain colors would be obtained.

The results of installing the Underwood producer gas system upon some terra cotta muffle kilns was the topic of a talk by F. B. Ortman, of the Northwestern Terra Cotta Co., Chicago. This system has just recently been installed at the above plant and the different experiments that were made were fully described, thus making this an interesting paper to those who were interested in burning with producer gas.

At the conclusion of the reading of papers, G. B. Luckett, president of the Indiana Brick Club, addressed the convention, with a talk which advocated greater co-operation among brick manufacturers. He gave the history of the formation of the Indiana Brick Club, the members of which were at first very hostile towards each other. Even at the first few meetings the different manufacturers regarded each other with great suspicion, but finally began to realize that their neighbors were pretty good fellows after all and soon the club grew to greater dimensions and proved to be very beneficial to all members.

MOVIES AN INTERESTING FEATURE

On Wednesday evening, everyone attended the motion pictures given at the Engineering College of the University of Illinois. Pictures showing the manufacture of paving brick, the testing of paving brick in the university laboratories, and the manufacture of electrical porcelain were here exhibited.

After the movies, the entire group attended a smoker at the University Club, where speeches were made and refreshments served. At this smoker Dr. Washburn told of the research and investigations being made on optical glass at the university laboratories and stated that the ceramic department was working in co-operation with the Bureau of Standards in solving problems which come up in their investigations and experiments.

Prof. S. W. Parr, of the department of chemistry at the University of Illinois, then followed with a few words telling how the university was doing its bit. There are nearly 3,000 men, who were formerly connected with the University of Illinois, now doing important work in the various branches of government service. An Illinois man is responsible for the dye which gives the color to our khaki uniforms. Another is in charge of the sanitary work being done in Jerusalem. A third is directing the manufacture of optical glass at the Bureau of Standards. Many more important phases of war work are being undertaken by Illinois men and one can not help but be proud of our state institution.

The old veteran brick and tile manufacturer, W. Hammerschmitt, of Lombard, was called upon for a talk, in which he recalled some of the good old meetings when the organization was first perfected. He claimed that this association grew out of a drain tile association which was first formed. At that time, it is said, there were drain tile plants scattered all over this state.

W. D. Gates, of Chicago, another charter member of the Illinois Clay Manufacturers' Association, who is always on deck with an interesting story, was running true to form on this occasion and related some anecdotes that are guaranteed to cure all blues and pessimism. In fact, it took the war poem which Harvey C. Adams recited later, to bring the gathering back to mother earth again.

RESOLUTIONS ADOPTED

On Thursday morning the various organizations represented at the convention met to hold their business meetings. At 11:00 A. M. the final session of the association was called. Resolutions were read, expressing thanks to the officers for their good work during the past year, to the men participating in the program, to the department of ceramic engineering of the University of Illinois for the aid it is giving the clayworkers thruout the state, to the chamber of commerce of the City of Champaign for the trip arranged to the Chanute Field, and to the various organizations which met with this association, and who were invited to meet with it again.

The nominating committee, consisting of F. W. DeWolf, D. C. Haeger, and W. Hammerschmitt, recommended the following men for officers for the coming year: President, D. F. Stevens, of Cayuga, Ind.; vice-president, Charles E. Carter, of Peoria, Ill.; and the secretary and treasurer offices were combined into one which was to be again in charge of Professor Cullen W. Parmelee, of the University of Illinois. A new cost accounting committee was recommended and the selection of the members was left to the chairman of the committee, D. C. Haeger. This closed the meeting, after which every one attended the luncheon.

UNIVERSITY'S SERVICE TO UNCLE SAM

Three addresses were given at the luncheon, the first being by E. J. James, president of the University of Illinois. His talk was confined mainly to the value the university has been to the nation during these war times. It will surprise many to know that the history and psychology departments of the university play just as important a part in war work as do the other departments, such as chemistry, ceramic, etc. One of the faculty in the history department was asked by the government to gather together the history of events which led to the war so that the people might be better informed on this subject. The psychology department was called upon to find methods whereby a man can be judged quickly as to his mental ability to capably handle certain positions in the army.

F. W. De Wolf, state geologist, followed President James with a paper which he read on "The Development of Our Mineral Resources in War Times." The text of this paper was the work being done by the geological survey in finding new deposits of minerals used largely in war work and gathering data on the extent and locations of the various deposits of these different minerals.

The final speech was by F. W. Butterworth, of the Western Brick Co., Danville, Ill., who was a member of the committee of clay products men who were in conference with the fuel administration at Washington. He told of the results of the conference and stated that the administration has assumed an attitude less favorable to clay products after the second conference. Owing to the fact that new rulings and a definite decision has been made in regard to the coal supply to be allowed the clay products industry, the text of Mr. Butterworth's talk will not be given here.

INSPECTION TRIP TO RANTOUL

After luncheon every one boarded a street car for Urbana, where an interurban car stood in readiness to take the entire group to Chanute Field, at Rantoul. This association was extremely fortunate because it is one of the few groups who have been granted permission to visit the entire cantonment. Two lieutenants acted as guides for the party and conducted it thru all the shops where the various parts of engines and planes could be seen under construction, and thru the hangars where the assembled machine, ready for flight, stood. The lieutenants were very kind and explained the mechanism and operation of the airplanes so that each one felt capable of handling an airplane right at that time. After the inspection trip the party returned to the special car and rode back to Urbana, where it disbanded, everyone unanimous in the opinion that this was a very instructive and interesting meeting.

THOSE IN ATTENDANCE

Since a roster was not kept at this convention, we can give below only a partial list of the clayworkers who were in attendance:

Harvey C. Adams, Danville (Ill.) Brick Co.
W. T. Blackburn, Paris, Ill.
Eben Rodgers, Alton (Ill.) Brick Co.
F. W. Butterworth, Western Brick Co., Danville, Ill.
W. D. Gates, American Terra Cotta & Ceramic Co., Chicago, Ill.
D. C. Haeger, Haeger Brick & Tile Co., Dundee, Ill.
T. N. McVay, Streator (Ill.) Brick Co.
A. V. Smith, Streator (Ill.) Brick Co.
C. C. Barr, Barr Clay Co., Streator, Ill.
H. C. Kleymeyer, Standard Brick Mfg. Co., Evansville, Ind.
F. W. De Wolf, State Geologist, Urbana, Ill.
G. B. Luckett, Crawfordsville (Ind.) Shale Brick Co.
D. F. Stevens, Acme Brick Co., Cayuga, Ind.
F. W. Von Oven, Naperville, Ill.
F. B. Ortman, Northwestern Terra Cotta Co., Chicago, Ill.
W. Hammerschmitt, Lombard (Ill.) Brick & Tile Co.
F. R. Carter, Peoria, Ill.
A. E. Huckins, Champaign, Ill.
B. F. King, Colchester (Ill.) Brick & Tile Co.
J. M. Mamer, Campus, Ill.

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REFRACTORIES MANUFACTURERS HOLD SIXTH ANNUAL MEETING *in* CHICAGO

WITH A MEMBERSHIP GAIN of more than twenty per cent. during the past year, the Refractories Manufacturers' Association held its sixth annual convention in Chicago, March 7th and 8th, ready to deal with the problems that confronted the fire brick industry with ever-increasing confidence. Probably the greatest of these problems was the combination of embargoes on practically all lines east and west of Pittsburgh and the car shortage that was almost universal in the various plants of the membership.

Despite the importance of fire brick in the manufacture of iron and steel and the constant demands made upon manufacturers of fire clay brick and silica brick by the metallurgical industries, production was materially reduced in November, and this reduction was made still greater in December, partially due, at that time, to coal supply as well as to lack of railroad equipment in which to transport both the raw material and the finished product.

CAR SHORTAGE KEENLY FELT

Despite this decreased production, however, stocks have accumulated to the point where congested sheds threaten shut-downs. The only thing that will relieve the situation is the lifting of the embargoes that now lie against fire brick or the granting of exemptions that will have the same result—this with some better arrangements than at present exist for the obtaining of an adequate supply of cars in which to ship important orders.

Reports were read by representatives of fire brick interests in fifteen states, and it was found that with few exceptions, the progress of the industry had been badly hampered by lack of transportation facilities.

NEW MAGAZINE PUBLISHED

The association has been particularly active during the past year in its co-operation with the American Society for Testing Materials and with the American Gas Institute. It has established a Fellowship at the Mellon Institute of Industrial Research and during the past six months has started an association magazine called "Refractories," which is mainly devoted to plant sanitation industrial housing, profit sharing plans, group insurance and similar lines of welfare work.

ELECTION OF OFFICERS

The officers who served last year were all re-elected, Porter S. Kier of the Kier Fire Brick Co., Pittsburgh, Pa., president; E. M. Allen, of the American Refractories Co., Chicago, Ill., vice-president; John H. Cavender, Chicago (Ill.) Retort & Fire Brick Co., treasurer, and Frederic W. Donahoe, Pittsburgh, Pa., secretary. Two new names were added to the executive committee, E. M. Weinfurtner of the Ashland (Ky.) Fire Brick Co., and George A. Balz of the Didier-March Co., of Perth Amboy, N. J.

* * *

New Addition for Ohio State University

Ohio State University, Columbus, Ohio, is about to build a $20,000 addition to its mines building, to provide additional space for the laboratory of the federal bureau of mines, located there since last fall.

The bureau's station at Columbus experiments in Ohio clay products.

BUILDING TILE MAKERS ORGANIZE *for* WAR WORK

Special Bureau Established, With Aid of Government, to Handle All War Orders—Federal Trade Commission Sets Tentative Price of $6.10 Per Ton f. o. b. Plant

EPOCH-MAKING EVENTS are getting to be almost a daily occurrence in these strenuous and unparalleled times. Things are happening in such rapid succession that one must needs spend much of his time in reading and in conversation with those who are well informed, in order to be thoroly posted on what is going on.

The other day in Washington, the hollow building tile manufacturers got together, and with the aid of the government, have formed a bureau to do business with "Uncle Sam."

QUICK TO SEE OPPORTUNITY

It was not long after the declaration of hostilities by the United States, that the hollow building tile makers jumped into the war game with both feet. As a result of some very good work, largely on the part of the Hollow Building Tile Association, of which E. R. Sturtevant is secretary, the government has decided to use large quantities of this excellent material for the construction of warehouses, supply depots, housing projects, and so forth, during the current and succeeding years, or as long as the war lasts. When it is known that the United States will spend in the neighborhood of six million dollars for buildings this year, according to the estimate of those who are well informed, and when it is also remembered that hollow tile will play no mean part in the government construction program, it will be seen just what the war business means for the hollow tile manufacturers.

It is largely due to the fact that the hollow tile men were prepared to demonstrate to the fuel administration that they had enough government business to warrant their operating to seventy-five per cent. of normal production, that led P. B. Noyes, director of conservation, to restrict this branch of the clay products industry to only twenty-five per cent. curtailment, while others were cut fifty per cent.

SPECIAL BUREAU A NECESSITY

It did not take long to see that in order to expedite the placing of war department business with hollow tile plants, it would be necessary to have some special agency on the part of the manufacturers for dealing direct with the government. Accordingly, with the assistance of the quartermaster's department a bureau has been established with which the government is to place all hollow tile business. In other words, the quartermaster's department will not deal directly with any individual hollow tile manufacturer while the bureau proves satisfactory. The bureau is something entirely aside from the Hollow Building Tile Association. The only consideration to becoming a member of the bureau is an agreement to pay to it a commission of fifteen cents per ton on all business received. The affairs of the bureau are in the hands of a committee as follows:

E. R. Sturtevant, Secretary of the Hollow Building Tile Association, Who is Active Manager of the New Tile Bureau Which Will Co-operate With the Government in Supplying Its Needs for This Material. As a Result of the Excellent Work Done by the Hollow Building Tile Association, Particularly by Mr. Sturtevant, the Government Has Decided to Use Large Quantities of Tile for Construction of Warehouses, Supply Depots, Housing Projects, and So Forth, During the Current and Succeeding Years, or as Long as the War Lasts.

H. M. Keasbey, National Fire Proofing Co., Flat Iron Bldg., New York, N. Y.; J. J. Whitacre, Whitacre-Greer Fireproofing Co., Waynesburg, Ohio; H. C. Downer, Malvern Fire Clay Co., Malvern, Ohio; Frank R. Hale, Vigo-American Clay Co., Terre Haute, Ind.; J. T. Howington, Coral Ridge Clay Products Co., Louisville, Ky.; J. R. Martin, Star Clay Products Co., San Antonio, Tex.; B. C. Keeler, Mason City Brick & Tile Co., Mason City, Ia.; G. A. German, Sun Brick Co., Ltd., 32 Toronto St., Toronto, Canada.

E. R. Sturtevant, of Chicago, is the active executive who will be in charge of the bureau office.

PRICE FIXED

In order to stabilize the price of hollow tile on government work, the Federal Trade Commission has just completed an extensive investigation of manufacturing costs in this branch of the industry and has fixed a tentative figure of $6.10 per ton f. o. b. plant, which price will be the maximum on all orders placed with the bureau by the quartermaster's department.

The hollow tile bureau is in effect an agency for the distribution of this particular commodity. The government has become a party in setting aside the Sherman Anti-Trust Law, and by so doing, has set a precedent which furnishes a splendid example of what may be possible in the other branches of the clay products industry.

A method to govern the distribution of orders among the various plants who have become identified with the bureau, is now the most serious problem and the only matter to be settled before a perfect working arrangement can be established. Mr. Sturtevant is now engaged in solving this problem and from the latest word it seems that a satisfactory solution is in sight.

It is certain that the quartermaster's department is going to use tremendous quantities of hollow building tile and it is looked upon with great satisfaction by all concerned that not a few hollow tile plants will enjoy capacity operations during the present year.

New Jersey Meeting April 12

"We are planning a meeting of the New Jersey Clay Workers Association," advises Geo. H. Brown, director of ceramics, "at Rutgers College, New Brunswick, N. J., on April 12. As soon as arranged, we will forward you a list of the papers to be presented at the morning, afternoon and evening sessions of the Association."

It will, therefore, be possible to announce the papers to be read, in the April 9 issue of *Brick and Clay Record.* Look for them and be prepared to attend the meeting if possible.

FIXED PRICES *on* REFRACTORIES

REPORTED AGITATED *by* SOME BUYERS

REFACTORIES INTERESTS in the Pittsburgh district are interested in reports that some consumers are attempting to have congress enact legislation fixing the prices for their products, states "The Iron Trade Review." It is claimed that this step has been taken by a number of smaller purchasers, but no information is available to give authenticity to the report. Some makers of iron and steel, it has been asserted, contend that inasmuch as the prices of their products are regulated by the government they should be protected against advances in the prices of materials they buy, including refractories, clay, limestone, etc. Consideration is said to have been given to the plan of incorporating these items in the Pomerene bill, which, as now framed, covers only iron and steel products.

REFRACTORIES
(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$45.00 to 55.00
Missouri-Illinois	55.00 to 65.00
Ohio	45.00 to 50.00
Kentucky	45.00 to 55.00
New England	55.00 to 65.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$40.00 to 50.00
Ohio	35.00
New England	48.00 to 58.00
SILICA BRICK	
Pennsylvania	$50.00 to 60.00
Chicago	55.50 to 65.50
Birmingham	45.00 to 55.00
MAGNESIA BRICK (Per Net Ton)	
9 x 4½ x 2½	$135.00 to 160.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$135.00 to 140.00
BAUXITE BRICK (Per Net Ton)	
55 per cent	$ 40.00 base
76 per cent	100.00 base

It has been pointed out that prices for refractories have remained stationary since the outbreak of the war, despite the increasing costs of labor, operations and materials producers have to buy and in face of the heavy demand for their output. This is held to be sufficient reason for not attempting to regulate prices of refractories. Embargoes still make it difficult to obtain coal, limestone and other requirements and have made it necessary to restrict manufacturing operations.

In the Ohio districts, prices form a minor problem, as the delivery conditions remain abnormally acute. Orders are plentiful regardless of price, but the manufacturers are not able to make deliveries. One operator reported that during the entire month of February only seven per cent. of the cars ordered were obtained from the railroads, and a total of one day's supply of cars was set during the first ten days of March. Releases, priority orders and the evident urgency of the steelmakers' needs do not enable the maker of refractories to secure cars.

The Clay Products Co. Offices Moved

The Clay Products Co., which operates three large factories at Brazil, Ind., is planning to move its administrative and sales offices to that city. The company's offices are now located in the Lemcke Annex, Indianapolis, Ind., having been moved there from Chicago some time ago in order to be nearer the manufacturing departments. In order to complete the step, the company has decided to place the administrative and executive offices where the factories are located. The move is not only in spirit with the times, to produce greater economy, writes H. H. Titsworth, president of the company, but is made to secure higher efficiency. Two of the three factories of the Clay Products Co. are in operation on government work.

SUCCESS *of* OPEN PRICE *in* IOWA

Drain Tile and Hollow Building Tile Manufacturers of Hawkeye State Report Great Benefits From Policy Which Has Now Been in Effect for Almost Two Years

By W. S. Elton

of the Richland (Iowa) Tile Co.

THAT THE OPEN PRICE PLAN can be used successfully in the distribution of drain tile and hollow ware, has been demonstrated beyond question by Iowa clay products manufacturers.

This policy was inaugurated among the tile makers, particularly in the southeastern portion of the Hawkeye state, in August, 1916. At that time there were as many different prices in effect in this district as there were manufacturers, the farmers taking advantage of the situation by playing the old auctioneering game—that is, using the lowest price that they could possibly find to hammer the rest of the manufacturers down to the lowest level.

EVERYBODY LOSING

The trade was in a chaotic condition. *No one was making any money and the best that any of the manufacturers were doing was to break even on expenses.* The dealers were averse to handle any drain tile or hollow building tile as one factory would sell the farmer direct as cheaply as the other one could sell the dealer. This kept the dealer out of the "game" and the tile men had no outlet on the dealer's yard for surplus stock during the idle times, as he absolutely refused to tie his money up in something that was as sure a gamble as was drain tile and hollow blocks.

The situation became so intolerable that a meeting was called at Washington, Iowa, in August, 1916, at which thirteen of the manufacturers were present.

PRICE LIST OF

THE RICHLAND TILE CO.

Box 65. Richland, Iowa.

Prices Effective November 1, 1917.

DRAIN TILE

Sizes	Price per 1,000 pieces	Weight
4 inch	$ 28.00	6.5 lbs.
5 inch	35.00	8.9 lbs.
6 inch	47.00	13.0 lbs.
7 inch	60.00	16.5 lbs.
8 inch	78.00	18.8 lbs.
10 inch	120.00	26.6 lbs.
12 inch	175.00	32.6 lbs.

HOLLOW BUILDING TILE

5 x 8 x 12	$52.00	16.4 lbs.
4 x 5 x 12	32.00	8.0 lbs.

All previous prices withdrawn.

TERMS:—Net Cash; or 60 day Acceptance from date of invoice. Freight only allowed upon receipt of original Freight Bill.

RICHLAND TILE COMPANY

This Concern Has Its Monthly Price List Struck Off by the Local Printer and Distributed Among Its Competitors. Other Tile Manufacturers Do the Same, So That There is a General Monthly Exchange of Authoritative Price Information.

DIPLOMACY WINS

M. L. King, former secretary of the Permanent Buildings Society, Des Moines, Iowa, was chairman of this meeting and after a few preliminiary remarks, he adroitly suggested that it might be interesting for those present to know just what prices were being quoted on drain tile and hollow building tile at that time in southeastern Iowa. Since it is perfectly legal for one to tell what he has done in the way of price, there was nothing improper in this suggestion. After a little hesitation one of the manufacturers spoke up and recited his price list. Another followed and then another. It was not long before the information came out in stammering accents on the part of a few of the manufacturers in reporting their figures, and some faces grew red. A motion was made then and there to continue this price reporting feature at future meetings, and in less than two months following, over one-half of the manufacturers of Iowa, together with the more progressive of Minnesota were reporting thru the Des Moines office of the Permanent Buildings Society.

This system gave the Iowa hollow ware manufacturer a line on his competitor that he had never been able to secure before. At the monthly meetings those manufacturers who published a price and then quoted another were given an opportunity to explain or apologize. It happened that this was only necessary once or twice, following which the offending one was glad to stiffen up his back and live up to his published prices.

SYSTEM WORKS MANY BENEFITS

Since the open price plan has been started on its way, Iowa tile manufacturers, particularly those situated in the southeastern portion of the state, have had very little trouble. *They secure a fair price and all are making a living profit.* The farmer feels that his dollar is as valuable at one place as it is at another, and last but not least the dealer has swung into line and will now handle and push the sale of drain tile and hollow building tile, knowing that all of the manufacturers will recognize and protect him on his margin profit.

There has been some trouble thru the difference made in prices by the cash discounts given—some giving two per cent. for ten days, and some five per cent. However, the manufacturers are working away from that stage by trying to make all prices net cash, or sixty days with a trade acceptance.

There is one point that must be remembered in taking up the question of an open price policy, and it is a most vital one. *Manufacturers should not be discouraged because they do not come in at first.* It seems to be a part of our system of things in this vale of tears that perfection is to be sought after but seldom obtained. With the open price system the same holds true. There are a few manufacturers who will always be below the market price. As soon as the level raises they will follow up in the same relation. *The other manufacturers who are operating under the open price plan must be BIG ENOUGH to overlook and disregard the attitude of the few who are not in line.* This has been a mighty big stumbling block for the Iowa tile men. It takes a lot of back bone to hold to a published price which is fair and contains only a living profit, when you know you are losing business because there are some who are below you in price, but it has been found that the stiff back bone is the proper attitude. It will bring the other fellow into line, in time.

FIND FIRM ATTITUDE PAYS

There are two plants in southeastern Iowa who have not as yet come in under the open price plan and it may be stated emphatically that they have caused some loud talk and heartburnings, but the other manufacturers have stood pat and find that the other prices are coming up to a level rest.

In reporting prices *care must be taken to report only prices which are in effect.* What has passed is legal, what is to pass is not. During the meeting our method is to call for anyone who has any change in price to file same with the secretary and the only prices that are filed are those which the manufacturer has already put into effect. These are published, and the balance of the manufacturers can do as they see fit. There is absolutely no understanding of any kind that the rest do the same as one or two other tile makers, but human nature being the same all over, and the balance of the manufacturers feeling that their material is as good as the other fellow's, also feels that they are entitled to the same price and usually put into effect the new price also if they are below the market.

PRICE INFORMATION NOT CONFIDENTIAL

Another point to remember in giving these prices is that it must be distinctly understood that same is not to be held confidential but is to be exchanged with others who may wish to exchange prices. It is not necessary that this price information should come from the members of the association alone. Every manufacturer should be invited to publish and exchange his prices with all the rest.

There is no question but that the open price plan has accomplished wonderful results for the Iowa clay products manufacturers. One man says, "The most surprising thing to me is the fact that my competitors on the right and on the left are really human and likeable and are entitled to live, enjoy life and make a profit. This puts the sale of drain tile on an entirely different basis than heretofore. Instead of price being the only point, we have this consideration eliminated and find that we can talk quality, service and so forth. Instead of watching the other fellow, we now watch the consumer to find out if he is satisfied. We also find more uses for our material and really give a customer better quality as we are now getting a price that enables us to put quality into our ware."

NOT WILLING TO TURN BACK

This manufacturer further says, "I for one would no more consider going back to the old ways of doing business for one month than I would consider giving away the product of our plant for a like period. Both amount to the same thing and result in hard work, misunderstandings, cut throat competition and no profits. To me the open price plan is the most wonderful accomplishment that our business has ever seen."

* * *

Cleveland Firm Prepares to Use Trucks If Railroad Traffic Does Not Improve

The first brick and clay products firm in Cleveland, Ohio, to plan to use motor trucks in order to make deliveries to out of town customers is the American Face Brick Co., The Arcade, Cleveland, of which John Harms is general manager. This prediction is made by Mr. Harms, following no perceptible improvement in the railroad situation in spite of the fuel shut-down order of Fuel Administrator Garfield.

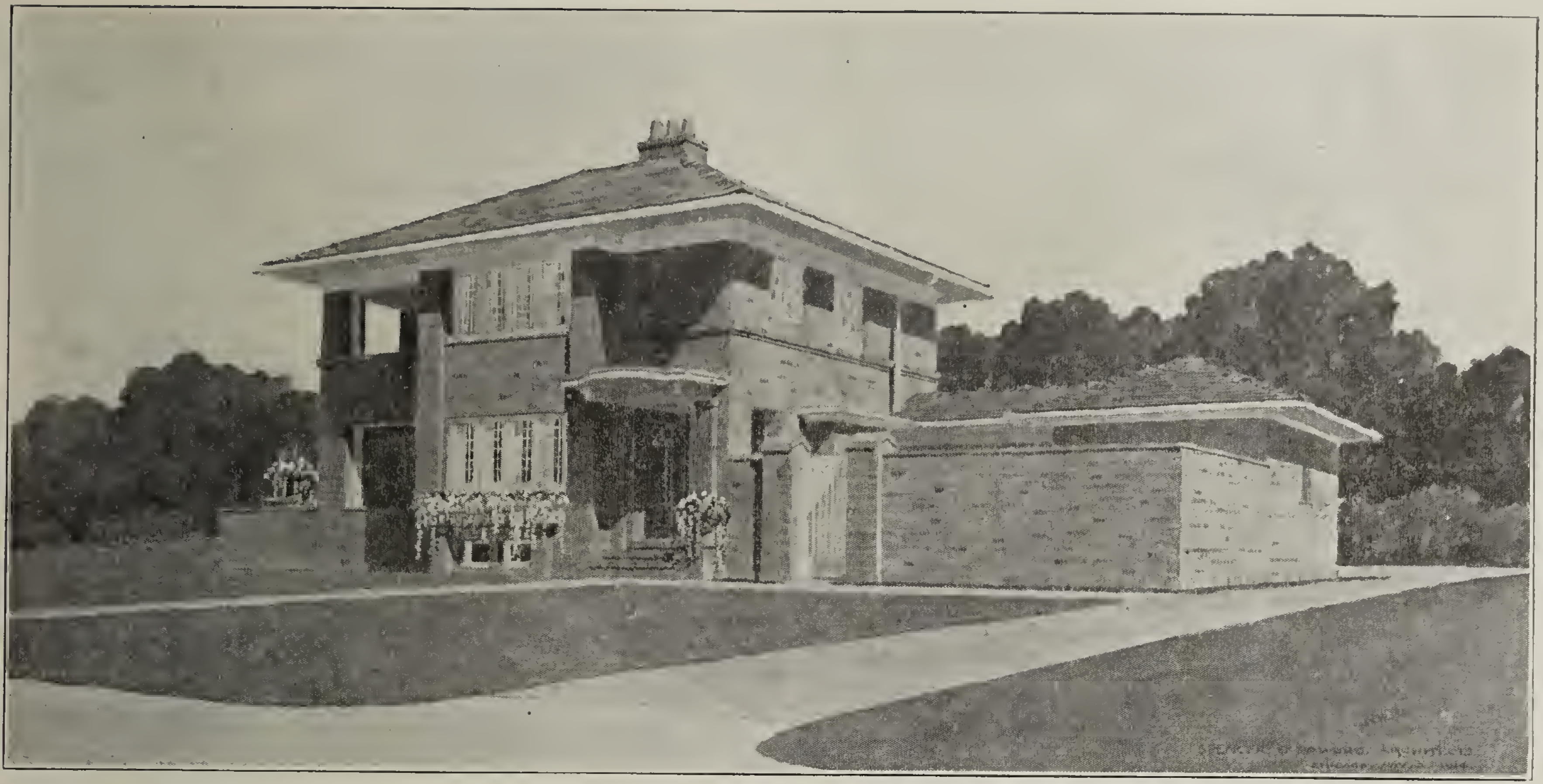
At present, however, Mr. Harms points out, there is sufficient brick in its various yards to meet current requirements. This is primarily due to the absence of extensive building operations in this district in the last few months. Reports received here show that there are 3,000,000 face brick in the hands of Cleveland dealers supplied by this firm. Local interests include the Builders Supply & Fuel Co., Lakewood Masons Supply Co., Geist Building Material Co., Cleveland Material Co., Goff-Kirby Co., Sheets Brothers Co., Ideal Cement Co., and the Lake Erie Lumber Co. These firms are supplied thru the American, which is now agent for nearly a score of producers all over the country.

"Factories," says Mr. Harms, "are well enough supplied to meet the current demand until next June. Until recently they shipped their product to Chicago, in some cases as much as 70 per cent., for distribution to consuming points. Chicago has diminished in prominence as a building supply center, however, and the tide is now turning in favor of Cleveland. As far as the outlet for face brick is concerned, Cleveland can be said to be the best market in the country.

"The main factor to be considered from now on, unless conditions change to a remarkable degree soon, will be transportation. As there is no indication of improvement, we are preparing to use automobile trucks in order to get our product here. Owing to the abnormal railroad conditions in other parts of the country, we are getting most of our brick thru Ashtabula and Columbus. It is from these points to Cleveland where the greatest trouble will develop, and if we find that automobile trucks will be the solution of the problem, we will use them."

Prediction by Mr. Harms for the outlet for face brick during the coming season is that less business will be done as far as quantities are concerned, but the expenses of the trade will be met. The chief outlet for face brick and all clay products for building purposes for that matter, in the opinion of Mr. Harms, is thru the Hebrew contractors, who are among the most active in and about Cleveland. "They are continually building and putting up a better class of buildings than they ever did before," says Mr. Harms, "and this is where a great deal of the face brick is going these days." The American Face Brick Co. conducts no yards of its own, but is a sales agent for the various firms it represents.

FACE BRICK MEN! LISTEN!!



Brick House Built by the Panama Pacific Clay Products Association at the Panama-Pacific International Exposition Held in the Early Part of 1915 at San Francisco. Mr. Gifford Suggests That Some Such House Should Be Built At Washington For the Headquarters of the American Face Brick Association.

Here is a man who suggests that, in view of the contemplated removal of the American Face Brick Association's office to Washington for the period of the war, a brick house should be erected as an advertisement to the whole nation that brick is the logical material with which to build in the present war crisis because of the necessity for hauling lumber long distances, and also because of the crying need for reducing annual fire loss this year as a measure of war economy. The idea is a good one and should receive the most serious consideration at the hands of all interested. Read about the plan in the following paragraphs.

WILLIAM H. GIFFORD
Manager, Brick Department, Wisconsin Lime & Cement Co., Chicago.

EVERY ONCE IN AWHILE some wide awake individual in the clay products manufacturing industry "pops up" with a bright idea. If one were to compile a list of the men who are just a step ahead of the rest of the crowd, the surest place to find likely candidates for such a list would be among those who have a reputation of doing the thinking in the business. There is no secrecy about the identity of these men. They are known by the product of their brain.

MANY GOOD SUGGESTIONS

Some of these men have suggested new ways of selling goods; others have advocated movements on the part of certain groups of manufacturers looking forward to placing burned clay ware in the front rank where it belongs in comparison with other building materials. Some have suggested money saving manufacturing plans, and others have invented new shades, textures and colors, as well as designs of ware.

This time the suggestion has nothing to do with either manufacture or type of product, but may be labeled as a valuable thought in the marketing of brick.

To come to the point, Wm. H. Gifford, manager of the brick department, Wisconsin Lime and Cement Co., Chicago

—a brick dealer—suggests that nothing would be more appropriate or more productive of prestige for building brick than the erection of a suitable home and headquarters at Washington, for the secretary of the American Face Brick Association, whoever he may be. Someone has said that there was a possibility of moving the headquarters of the American Face Brick Association, to Washington, for the period of the war, at least, and this may have had something to do with Mr. Gifford's suggestion.

WASHINGTON A CROWDED CITY

Anyone who has had reason to journey to the capital city since the opening of the war, realizes that Washington is far different than it was a year ago. Whereas before it was never crowded nor did not seem to be very busy, now it has taken on an altogether different aspect and from congested railroad terminals to crowded hotels the days' activities are one jam.

Julian Street, in writing on "Wartime Washington," in the March 2 issue of the "Saturday Evening Post" says:

"Men of domestic tendency who go to Washington for special work in connection with the war and attempt to make homes there for their families quickly discover that there is at least one form of profiteering that the Government has not suppressed. Whomever the war may have hit it has not hit the Washington landlord. No one has told him that he must 'be good.' He is practicing extortion and rolling in prosperity. In the last year rents have jumped from one hundred and fifty to two hundred and fifty per cent., whether for houses or apartments. Many regular residents have been tempted by the famine prices to lease their homes, and there has also been much speculation in apartments—the speculators renting vacant apartments, furnishing them cheaply, and subletting them at rates hitherto undreamed of in the capital.

PROCRASTINATION COST HIM MONEY

"I know of one man who was offered a furnished house at rental so exorbitant that he wished to consider overnight before signing a lease. When he went back next day prepared to accept the terms he was informed that the price had gone up. Disgusted at such gouging he went away again, but after a day's fruitless search for another house was forced to return and inform the agent that he would take the place at the higher figure. Imagine his feelings when he was told that the rental had once more undergone an overnight increase! This time he did not depart, but remained in the agent's office until the lease was drawn and signed.

"Another man, finding himself in Washington, for an indefinite length of time and anxious to have his family with him, searched for a month without finding a house such as he required. He was in despair. Then one day he read in the morning paper the obituary of an old Washington citizen who had died on the previous afternoon. From the street address mentioned in the paper he remembered the house of the deceased as one likely to suit his own needs. Jumping into his automobile, he drove there. Undismayed by the crape upon the door, he rang and asked to see the widow. When presently she appeared he informed her as tactfully as might be that he had heard of her loss, that he sympathized, and that it had occurred to him that she might wish to rent her home and go away. The lady was at first taken aback by this proposal. She had had no time to plan. Sympathetically her caller pictured the charms of the Southern climate. The suggestion struck her favorably. No doubt he was right. Yes, unquestionably warmth and sunshine would be beneficial. Before the enterprising gentleman left, the terms of a lease were agreed upon. He and his family are now living in that house."

HOUSE A NECESSITY

It would seem in view of this condition, that a permanent residence, built of brick and faced with brick, would be almost a necessity if the secretary of the American Face Brick Association were to take up his abode in Washington, even for the period of the war. The thought of building such a home of brick is a very good one and should not be difficult of accomplishment. There is no question but that clay products are forging to the front in the present national crisis and this industry will receive far more recognition than any of us have dreamed.

A MONUMENT TO BURNED CLAY

It behooves brick manufacturers to have their secretary so housed and the association headquarters so arranged as to constitute a monument to the beauty and permanence of face building brick as well as common brick. Washington is a mecca not only for foreign officials and military authorities, but what is far more significant for a vast hoard of the nation's business men. Those having business with the brick industry in Washington, if the office of the A. F. B. A. is moved there, will be impressed either favorably or unfavorably from the character of the secretary's quarters. This is a tremendous opportunity for the face brick manufacturers of the nation, particularly, to put across a telling blow for permanent and fire proof construction of burned clay.

This idea is offered to the brick manufacturers of America for their consideration. If anything is done it is up to them to do it. These are days of action. While many men are thinking about doing something, other men are actually doing it and are accomplishing results, putting those who are slow in action far in the back ground.

What do you think of the idea and are you willing to consider such a plan? Tell us now.

Remember, if it were decided to remove the headquarters of the American Face Brick Association secretary from Washington, after the war, the house could easily be sold and the money turned back to the donors. A well-built brick house is a readily saleable article.

⁂

Eastern Roads Win Boost in Freight Rates

A general increase of about 15 per cent. in commodity rates was granted on March 15 by the Interstate Commerce Commission to railroads east of the Mississippi and north of the Ohio and Potomac rivers, supplementing a similar increase allowed last June in class rates.

The order applies only to articles shipped in large quantities, such as brick, coal, grain, foodstuffs, oil, stone, cement, lumber and other staple products shipped under the "commodity" classification. The new rates will go into effect as soon as railroads file new tariffs.

The increase does not affect territory west of the Mississippi nor southern territory, except for shipments originating in the east or destined to that district.

The commission ordered that in raising the whole scheme of commodity rates, existing differentials, or relationships between cities or districts, be preserved. For instance, in cases where rates to certain eastern cities are a certain definite sum less than the rate to New York, this difference is to be preserved, altho the result may sometimes be more than 15 per cent. This provision will serve to maintain present relationships under the long and short haul laws.

DESIGNING *a* KILN *for* GLAZED HOLLOW WARE

Giving a Detailed Description, Accompanied by Complete Drawings, of How to Construct a Thirty-two Foot Round Down-Draft Kiln for the Burning of Salt Glazed Hollow Ware

By S. C. Karzen,
Superintendent, American Sewer Pipe Company,
Uhrichsville, Ohio

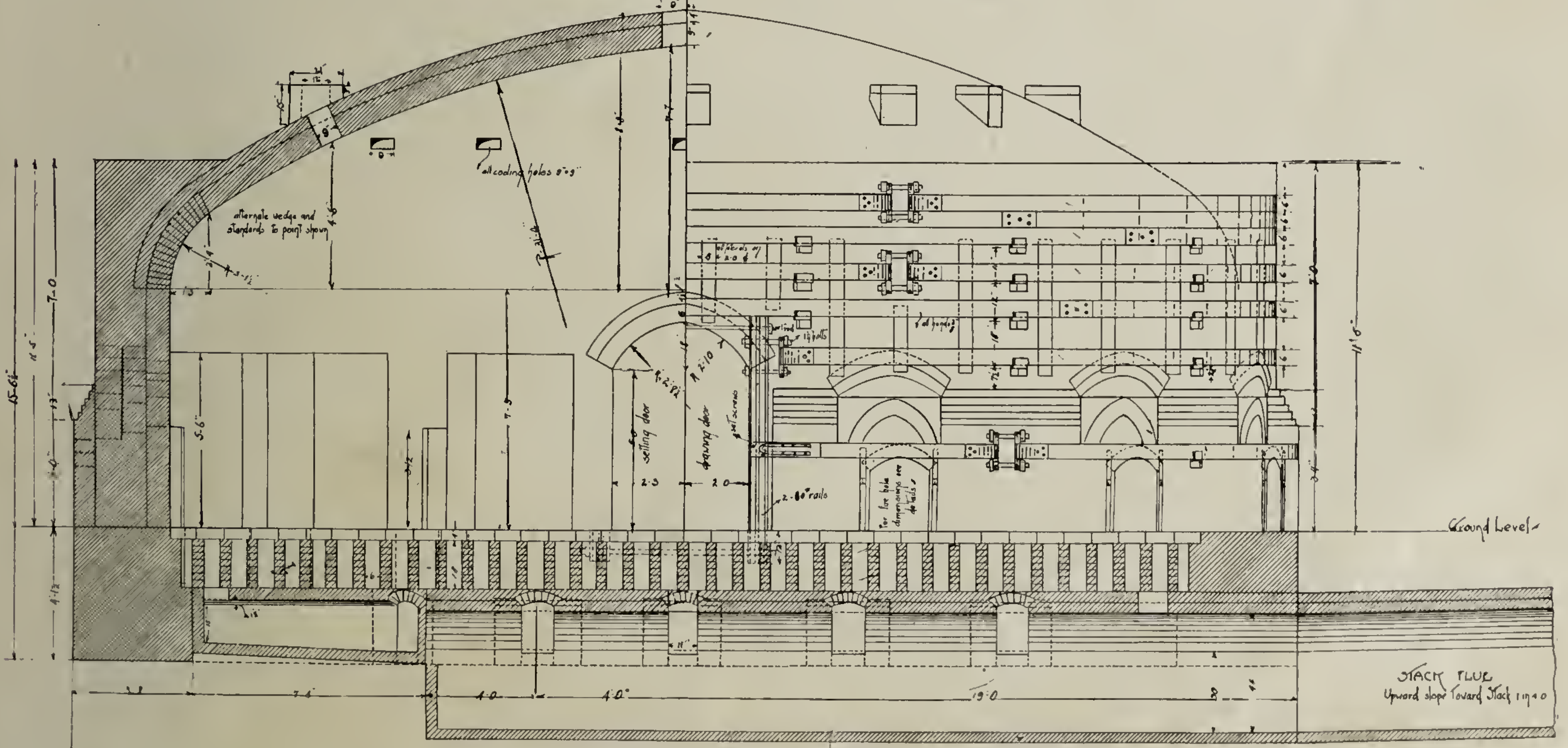
A FIRST CONSIDERATION in the construction of a round down-draft kiln is its diameter. This, of course, is a very important point since it governs the size of the kiln, which in turn depends upon the type of clay used in the manufacture of the ware, the local labor conditions, etc. The average kiln in use has a diameter of thirty-two feet. I know of several places where kilns of forty foot diameter are used and which from all accounts are giving real satisfaction. However, there are some disadvantages in building a kiln with such large diameter. The crown of such a kiln is usually short-lived, owing to its large span. Furthermore, where the ware is manufactured of a shale of short vitrification range, there is great danger of the ware falling over, thus causing heavy losses due to this source. It is also very difficult to obtain good heat distribution in a kiln as large as this. In order to set a kiln of forty-foot diameter, it generally requires more than one day's time, which is a point that must be considered when dealing with kiln capacity.

On the other hand, a large kiln saves fuel, in that a great tonnage is set and fired thru the preliminary stages at one time. I personally believe, however, that the bad points completely overbalance the good ones in the majority of cases, and consequently, I prefer a smaller kiln. Thirty-six and thirty-four foot kilns are quite common, but the thirty-two foot kiln seems to be in best favor.

In making the excavation for a kiln, care must be taken to dig deep enough so as to obtain a solid footing for the foundation. The kiln described in this article shows that a depth of five feet is necessary, but if the soil is shifting in character, it is better to excavate deeper, so as to obtain a good substantial foundation.

The item of drainage is very important. If water is present at a depth such as will cause the flue system to be damp, it is good policy to provide a sewer of small diameter leading from the stack flue to the nearest available outlet. This will insure a uniformly dry kiln bottom. Wet flues mean increased fuel consumption for each burn, and in the majority of cases, mean a large percentage of poor ware. The point of good drainage is often overlooked and an otherwise well proportioned kiln may give poor results just due to this fault.

The foundation for a kiln may be constructed of brick with a good cement mortar, or of a gravel concrete. A



Showing Vertical Section, Cut Thru C-D, of a Thirty-Two Foot Diameter Circular Down Draft Kiln for Burning Salt Glazed Hollow Ware. This Kiln is Giving Good Results on an American Sewer Pipe Co. Plant.

splendid foundation, however, may be obtained by the use of cull brick and a slush cement grout, used in alternate layers. This produces a very strong foundation, and is a very cheap installation. Any grade of cull brick may be used, and the brick can be placed very quickly and at a minimum labor cost. Care, of course, must be taken to obtain a level surface from which to start the kiln wall. A six inch kiln band should then be placed around the foundation just below the base of the kiln wall. This is necessary to prevent the wall from kicking off the foundation after a number of burnings, and helps to increase the life of the kiln in general.

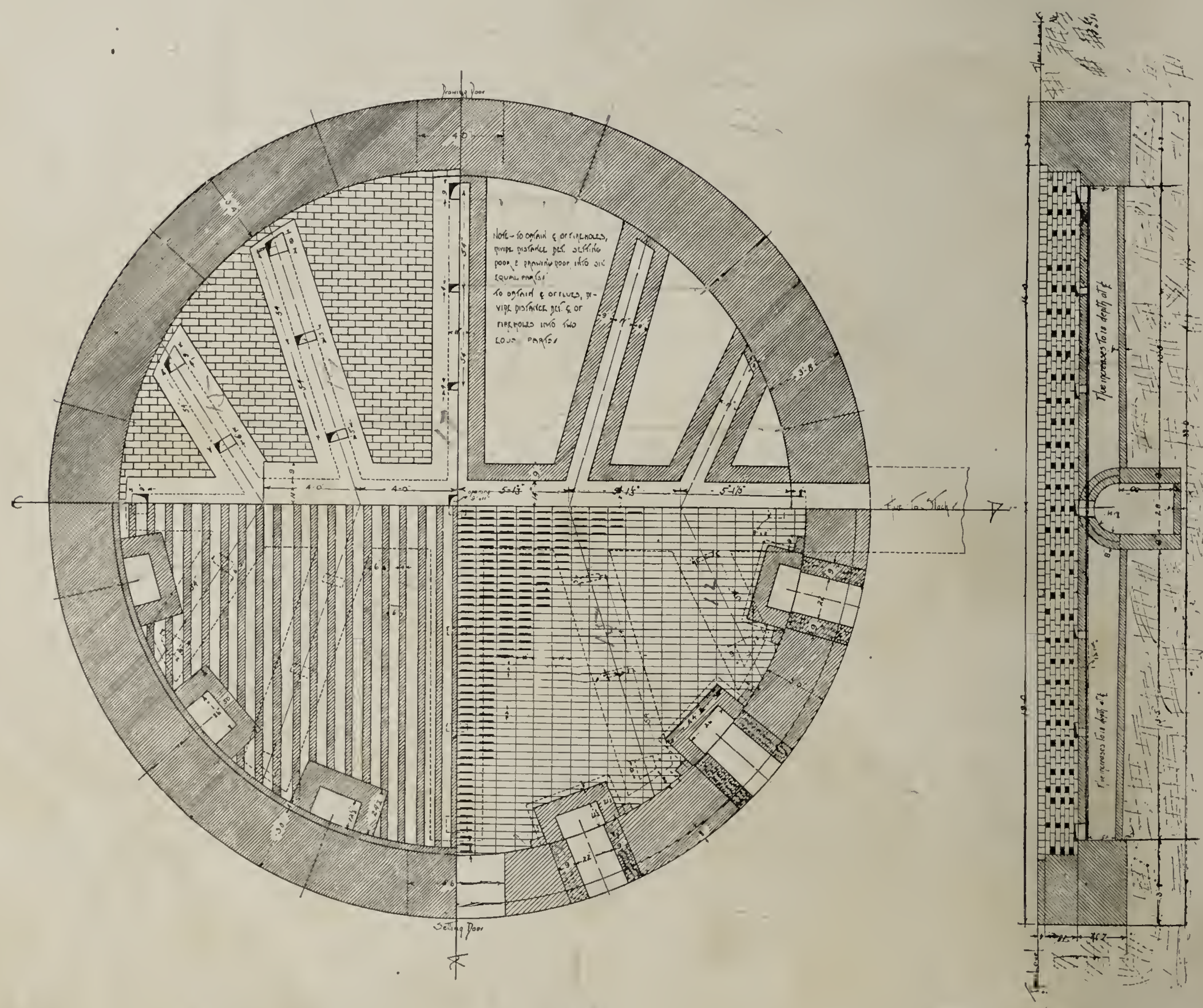
FLUE SYSTEM SHOULD BE CAREFULLY STUDIED

The flue system of the kiln under consideration is a derivative of the radial type. One of the chief objectionable features of the radial flue system is the trouble encountered in cleaning the flues. This annoyance is eliminated in the flue system shown here. The waste material from the small flues may easily be drawn into the main stack flue from which it is removed at the stack. A good point in favor of this type of flue system is the elimination of the excessive depth which is required where the well-hole system is used. In regions where drainage conditions are bad and the water level is not far from the surface, this feature is highly important.

It will be noted on the drawing that the size of the main stack flue is 28" by 30", the arch for same being semi-circular. I am unable to give any definite formula for determining the size of this flue, and altho much has been written on the subject, still I believe that no safe formula has ever been discovered by which one can safely be guided in determining the size of flue needed. The figures just stated are giving good results in actual practice. In case a kiln of greater diameter is built, the dimensions of the stack flue should be increased in proportion. Upon looking at the drawing it will be noticed that there is a slight upward slope of this flue, running from the kiln to the stack. This slope is about one inch in four inches and is considered as good construction, acting as an aid to the stack draft.

The stack flue may be constructed of a cheap grade of brick, preferably wire cuts made of a No. 2 fire clay, since this flue very seldom attains any excessive temperatures.

A radial flue is built between each set of bag walls, and is generally about eleven inches wide, with a depth of fifteen inches at the kiln wall and eighteen at the stack flue. This gives a drop of three inches from the wall to the stack flue, and materially aids in obtaining good draft. The radial flues cut directly into the stack flue arch but a good mason can build this without materially weakening the arch. The radial flue itself is generally arched for best construction, altho some builders prefer using flat fire clay blocks for covers. The openings into these flues can readily be adjusted, the largest opening being between the bags, and the size decreasing gradually as

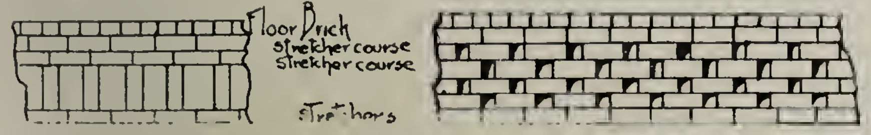

Drawing Door
Setting Door
Flue to Stack
NOTE — TO OBTAIN ℄ OF FIREHOLES, DIVIDE DISTANCE BET. SETTING DOOR & DRAWING DOOR INTO SIX EQUAL PARTS.
TO OBTAIN ℄ OF FLUES, DIVIDE DISTANCE BET. ℄ OF FIREHOLES INTO TWO EQUAL PARTS.
4'-0"
4'-0"
5'-1 5/8"
15"
3'-8"

This Is a Ground Plan View of the Same Kiln and the Section on the Right Is Taken Thru A-B from the Floor Line.

they approach the point of greatest draft, namely the stack.

HOW TO FIGURE SIZE OF FLUE

A good reference on flue regulation is found in volume 13, of the Transactions of the American Ceramic Society, written by Dwight T. Farnham, in which he outlines the method of determining radial flue dimensions, and also the openings into same. For the benefit of those who have not ready access to this article, I am giving two formulas necessary to determine these dimensions. We will consider the dimensions of our stack flues being "a" and "b." For this kiln we require twelve radial flues.



The Feather Flues for This Kiln Are Designed in the Usual Manner, That Is, of Leaving Openings Every Brick or So.

(1) To determine the diameter of a round flue equivalent in area to the rectangular flue of dimensions "a" and "b," use the formula

$$d=\sqrt[5]{\frac{32\,a^3\,b^3}{\pi^2\,(a+b)}}$$

in which d is the diameter of round flue
a is one dimension of rect. flue
b is other dimension
π is 3.1416

(2) To determine diameter of ten round flues equivalent in diameter to the one round flue, use the formula

$$N=\left(\frac{D}{d}\right)^{\frac{5}{2}}$$

in which D equals the diameter of large flue
N equals 12
d equals diameter of small round radials

(3) To obtain dimensions of rectangular radial flue from diameter of round radial flue just obtained, we must again use the first formula.

The friction offered the gases of combustion by the sides of radial flues is a trifle greater than that offered by the stack flue, but not enough to modify the dimensions obtained.

The friction offered the gases of combustion by the sides of radial flues is a trifle greater than that offered by the walls of the stack flue, but not enough to modify the dimensions obtained.

Having determined the size of the radial flues, it is a simple matter to determine the approximate average size of opening to lead into these flues. As noted on the drawings, these openings are centered on three concentric circles, which divide the radial flues into three equal sections. Three concentric sets of openings give ample heat distribution. It is now easy to figure the number of openings necessary, since wherever each circle cuts the radial flue an opening is needed. Given the number of openings and the dimensions of the radial flues, we can readily figure the average sized opening for same by the above formulas.

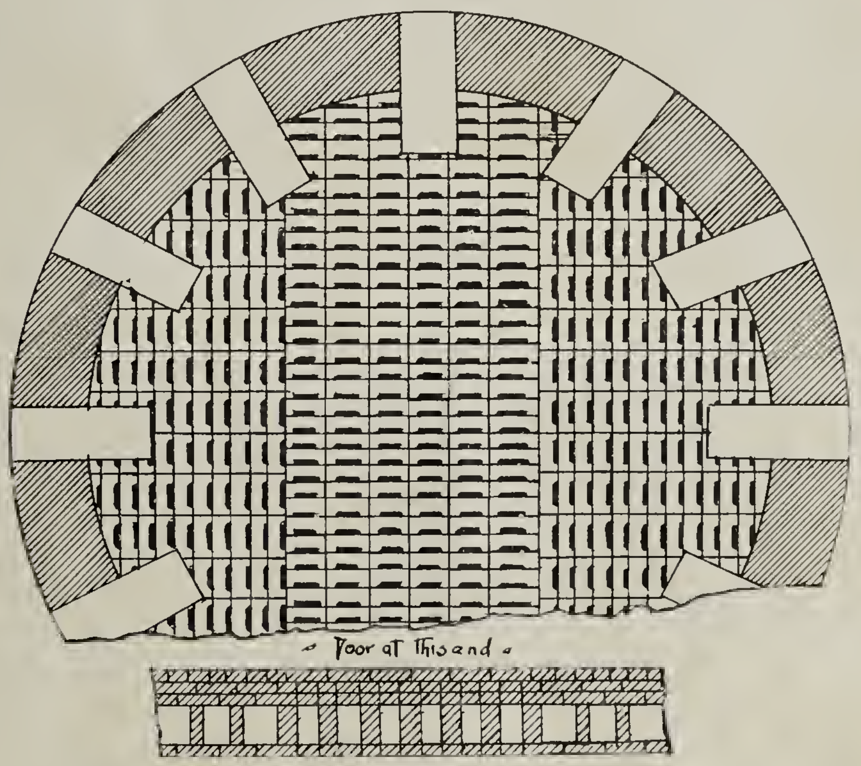
As already stated, the openings nearest the stack and stack flue, are of course the ones which will have the greatest draft. It is, therefore, necessary to apportion the size of these openings, so that the ones closest to the stack should be the smallest, whereas those between the fire bags and farthest away from the stack, should be made larger in proportion. In apportioning the dimensions of these openings, care should be taken that whatever is cut off of the smaller openings should be added to the larger openings, thus maintaining the average size of opening as determined by the formulae. By following this procedure we can expect to obtain good heat distribution in the kiln.

The above matter of flue regulation is often completely overlooked and as a result the heat distribution of the kiln is quite poor. The style of kiln is often blamed for this poor heat distribution when, as a matter of fact, it more frequently is due to the poor proportioning of the size of flues. Poor proportioning also leads to waste of fuel. I know of many cases where kilns are constructed with one main center flue, and one ring flue leading into it. One floor opening leads directly into the main center flue in the center of the kiln, and then other openings are located between the bags leading into the ring flue. A flue system of this type leads to a criminal waste of fuel, besides a large per cent. of poor ware is generally obtained. Very often the flues just mentioned consist of sewer pipe of any size handy at the time the kiln is under construction, and it is obvious that efficiency will not result from a flue system constructed in this fashion.

USE BRICK FOR FILL IN

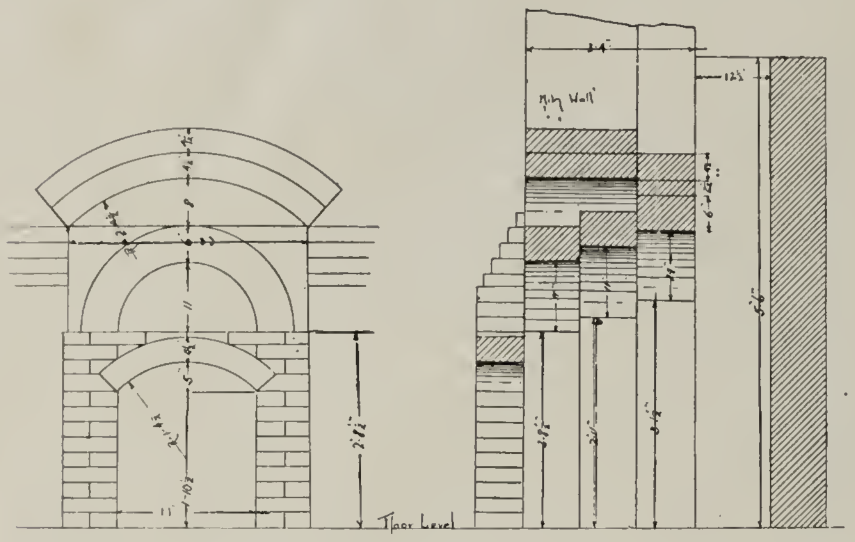
If dirt is used between the radial flues, it should be thoroly tamped, otherwise after a few burns, loose dirt and clay filling will shrink, permitting the flue walls to bulge inwardly, and quite often completely cut off the draft. I would suggest the use of old brick bats in filling in the foundation between the radial flues, since this makes a sound, substantial filling which never gives way.

Generally a paving is used to level across the flues, upon which the feather flues are to be constructed. This may consist of brick or sometimes a layer of ground fire clay is used for this purpose. I prefer using brick for this purpose since fire clay shrinks in burning, thus causing the kiln feather flues and kiln floor to sink in spots, making a very rough and uneven floor.



A Very Good Method of Constructing a Floor for a Hollow Ware Kiln Is That Indicated in This Sketch, Whereby the Floor Is Divided Into Three Sections.

The drawings show the usual method of constructing the feather flues, leaving openings every brick or so, thus perforating the walls to permit a ready flow for the kiln gases. Generally, these walls range from six seven courses high, depending upon the position of ground level with respect to the flue level. I have been constructing the feather flues in a slightly different fashion recently, and obtain equally good results at a greatly reduced labor and material cost. An accompanying sketch shows plainly how the two types of walls are built and a comparison is easily made. The bottom row of brick represents the paving. Upon this the brick are set upright, and two courses of stretchers are placed on these uprights. In this way a considerable saving in the number of brick is effected, besides the time required in construction is considerably reduced. Even greater amount of opening is provided for the circulation of the kiln gases than is obtained in the other type of feather wall. When a bottom of this type becomes so badly clogged that it is necessary to pull it up, the brick placed on end are usually found to be in good shape and can be re-used. This is rarely the case with the perforated type, owing to the fact that the brick become fused together.



Details for Furnace Construction Are Given in This Drawing. The Arches Are of the Step-Down Type Which Gives Good Permanent Construction.

The usual method of constructing a perforated floor is to stretch it from wall to wall, in a manner similar to that shown on the drawing. If the kiln happens to be over thirty feet in diameter, the feather walls are weak, and usually unable to stand up under continuous usage. A very good way of installing a kiln floor is that shown in an accompanying sketch. The kiln is divided into three sections. Two side sections of the floor are laid at right angles to the central section. These side sections act as braces and prolong the life of the floor and feather flues.

In laying the floor, the larger the length of brick used, the quicker the floor is built, and the fewer the brick needed for the feather flues. When using a larger floor brick, however, the corresponding thickness of same must be increased, otherwise the floor brick will break, and not stand up well in usage. The best size of brick to use would be the twelve inch block, if its thickness is in proportion, otherwise smaller brick must be used. These brick need not necessarily be of a very high grade of fire brick, since any No. 2 fire clay will stand the test. Many plants manufacture these brick out of their own material and have found it to stand up very satisfactorily.

HEIGHT OF BAG WALLS IMPORTANT

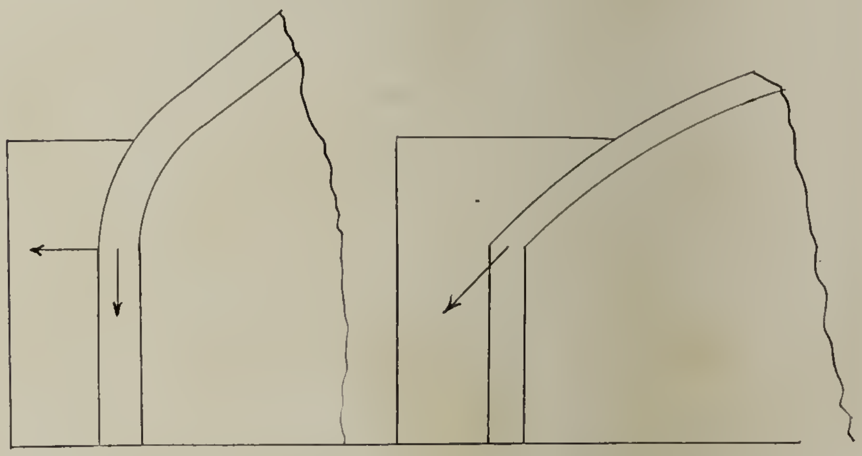
The fire bags should be constructed of the best grade of fire brick obtainable, owing to the fact that they are subjected to the most intense heat. The height to which they should be built will depend upon the kind of clay in the ware burned. Where shale is used, the bags should be constructed as high as possible, because low bags rmit the flames to strike the pipe direct, and shale pipe ariably crack and fuse when subjected to the direct action of the flames. Bags in the territories where shale is used are generally about seven and one-half feet high. In the districts using No. 2 fire clay, the bags can be made much lower, since sewer pipe placed in front of them can readily withstand the heat of the flames, without much loss. It is best to build the bag walls in this case as low as possible. High bags permit the flames to strike directly at the crown, which shortens the life of the crown considerably. It is, therefore, good construction to build the fire bags in all cases as low as possible, consistent with obtaining good ware. Sometimes, after having been in use for a certain length of time, the bag tears away from the kiln wall, allowing the flames to strike the ware wherever these openings occur. This often results in considerable ware being ruined. To remedy this difficulty, small corner jambs may be built in the kiln wall at the point where the exterior part of the bag meets the kiln wall. Even tho the bags open up, these jambs prevent the flames from striking the ware.

While the drawings show a nine inch wall for the bags, this is not always necessary. Where the bags reach the height indicated on the drawings, this width is necessary. For low bags the wall may be constructed with a nine inch width for about a height of three feet above the floor level, and only four inches the remainder of the diameter. In this way a considerable amount of material and labor can be saved.

THICK WALL REDUCES RADIATION

The wall of the kiln represented by the drawings is twenty-eight inches thick with an eight inch hub. Modern construction, however, has proven that the heavier the kiln wall the less the heat radiation and instead of using a hub as shown, the kiln wall should be built of the same thickness from top to bottom. This makes a heavier kiln wall and reduces the loss of heat thru radiation. With the hub wall, rain or snow is easily washed into the fire boxes. With a straight wall, the fire holes are better protected and the fires cannot be extinguished in bad weather. The initial cost of constructing the wall is thus increased somewhat, but the fuel saved soon pays for this extra cost.

The wall should consist of an inner lining one brick in thickness and an outer wall proper. The common practice is to use high grade fire brick for the inner lining. My experience has shown that for glazed hollow ware of shale as the clay base, and which is seldom burned to temperatures exceeding cone 4 (1210 deg. Cent.), the lining may be of ordinary wire cut brick made from No. 2 fire clay. Where the clay base used is a No. 2 fire clay, burning to cone 8 (1290 deg. Cent.) an ordinary poor grade of fire brick can be used. High grade fire brick linings seldom last any longer than the ordinary varieties and the cost is considerably greater. Usually



Sketch Showing Direction of Crown Thrust Depending Upon Method of Starting from Kiln Wall.

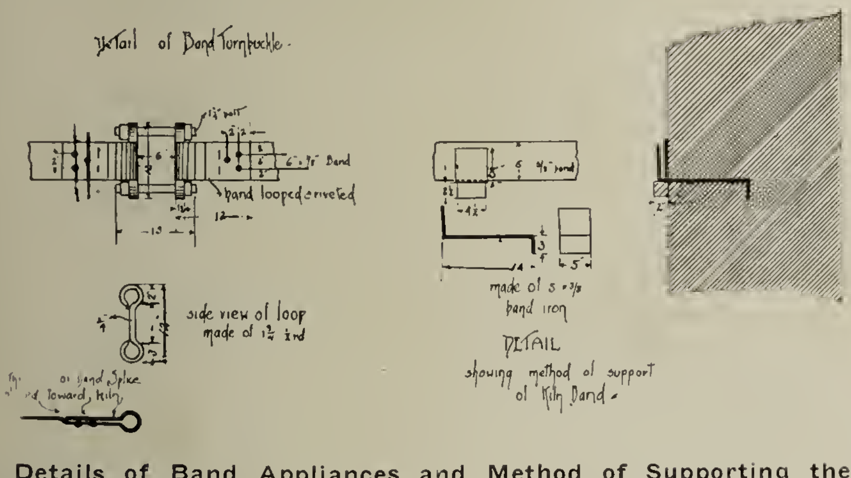
when a kiln wall lining commences to deteriorate, the cause may be found in the fact that there is not a proper tie between the lining and the outer wall. Care should be exercised in tying the lining in with the wall in a proper manner. This should be done by a series of headers. It is a common occurence for the lining to tear away from the kiln wall, leaving large openings between thru which the flames strike and cause the wall to lose its usefulness very quickly.

The kind of fire box used is the dead bottom type. However, a slight difference is made in the construction of this furnace in that we can use inclined grate bars for the first few days of the burn. The relative merits of the different fire holes in general use depends upon the kind of fuel used and the type of labor handling the fires. In case it is so desired, either inclined or horiozntal grates can readily be used with this kiln, without greatly modifying the construction. The only superiority which can be claimed for the fire holes shown is in the use of the incline grate to start the burn. With ordinary dead bottom fire holes, the fires must be started on the furnace floor and the fuel is slow in igniting, owing to the poor circulation thru the mass. By using the inclined grates at the start of the burn this trouble is eliminated and good combustion is obtained as soon as the fires are started.

GRATE AREA DEPENDS UPON CONDITIONS

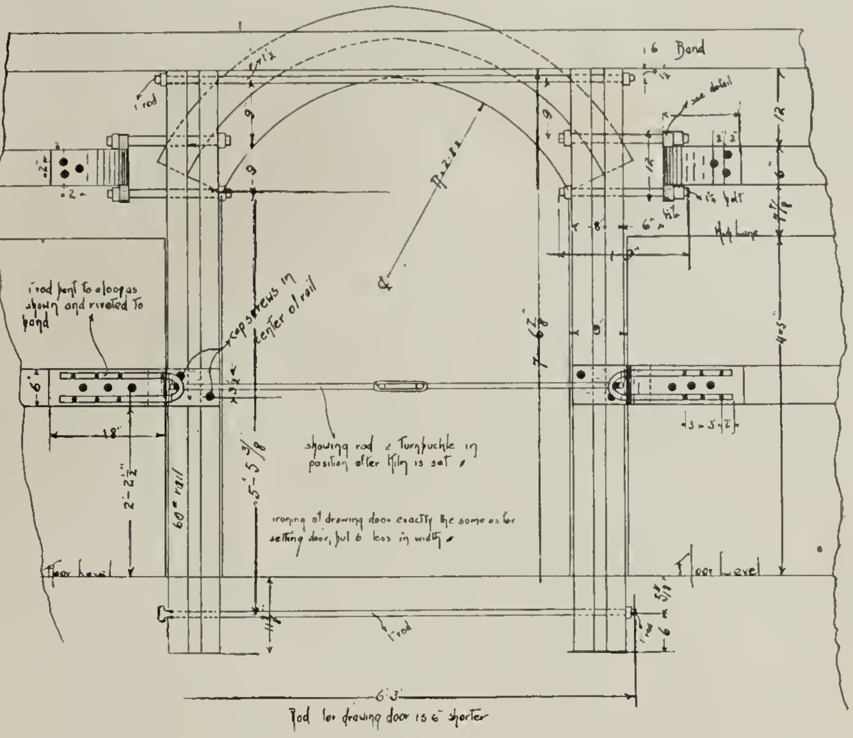
There are no hard and fast rules to be followed in determining the grate area of a furnace. I have numerous statements made by different authorities, to the effect that the combined furnace area should be proportional to the total floor space in a ratio of one to six, sometimes, one to five, and even as low as one to four. Personally, I do not believe that any definite rule can be used at all, but that the type of fuel burned and the ware manufactured govern, to a large extent, the size of grate to be used. Where a good grade of coal is used such as the Pennsylvania, West Virginia, and some of the Ohio fuels, the proportion of grate area to floor space may be as high as one to nine or one to ten, with good results. In the West, where the fuel is more lignitic in character, there is no question that the furnace area should be increased.

Where the dead bottom furnace is used, the width of the fire box must not be too great, since the clinker must arch and carry the weight of the fuel bed. Furthermore, too wide a bed of fuel may cause trouble in carrying oxidizing conditions when necessary. A width of twenty-two inches has proved very satisfactory wherever used and is the average width of furnace in general practice.



Details of Band Appliances and Method of Supporting the Band for Bracing the Kiln Wall Are Given in This Drawing.

The number of furnaces also depends upon the kind of fuel used. The drawings show twelve fire boxes for a thirty-two foot kiln, which is approximately a proportion of one to nine, comparing the combined furnace area to the total floor space. For a thirty-four and thirty-six foot diameter kiln, I would advise the use of fourteen furnaces, while on the other hand, ten furnaces would be sufficient for kilns of thirty and twenty-eight foot diameters. In the western states the number of furnace openings should be increased, averaging about fourteen openings for a thirty-two foot kiln. Also, the width of the furnaces of kilns in the western states generally averages several inches more, especially where horizontal grates are used.


6 Band
rod
see detail
1½ bolt
12
6
8"
6"
R=2'11
capscrews in center of rail
rod bent to a loop as shown and riveted to band
6"
18"
2-2½"
60# rail
5'-5⅜
7'-6⅞
4-5
showing rod & Turnbuckle in position after Kiln is set.
ironing of drawing door exactly the same as for setting door, but 6 less in width.
Floor Level
Floor Level
rod
6'3"
Rod for drawing door is 6" shorter

This Drawing Shows Details of Setting Door and the Rails, Bands, and Roads Used in Connection with It.

The kilns built thruout the Ohio districts have, in the main, too few fire holes for best results. I know of a thirty-four foot kiln in use which has but eight fire holes. This kiln generally takes half again as long to burn off as the other kilns on the same yard, which are constructed with more furnaces. It is, therefore, obvious that the matter of furnace construction be given full consideration.

The drawings show complete detail of the furnace equipment. The arches are of the step-down type which gives good permanent construction. An air space is also provided immediately above the fire arches, which helps cool the arches and thereby lengthens the life of the kiln wall.

In regard to doors, two wickets should be constructed on each kiln, one for the setting crew and one for the drawing crew. This avoids much trouble and annoyance in setting and drawing when two kilns close together are being filled and emptied. These doors also aid considerably in accelerating the cooling during the warm summer months by permitting a draft thru the ware.

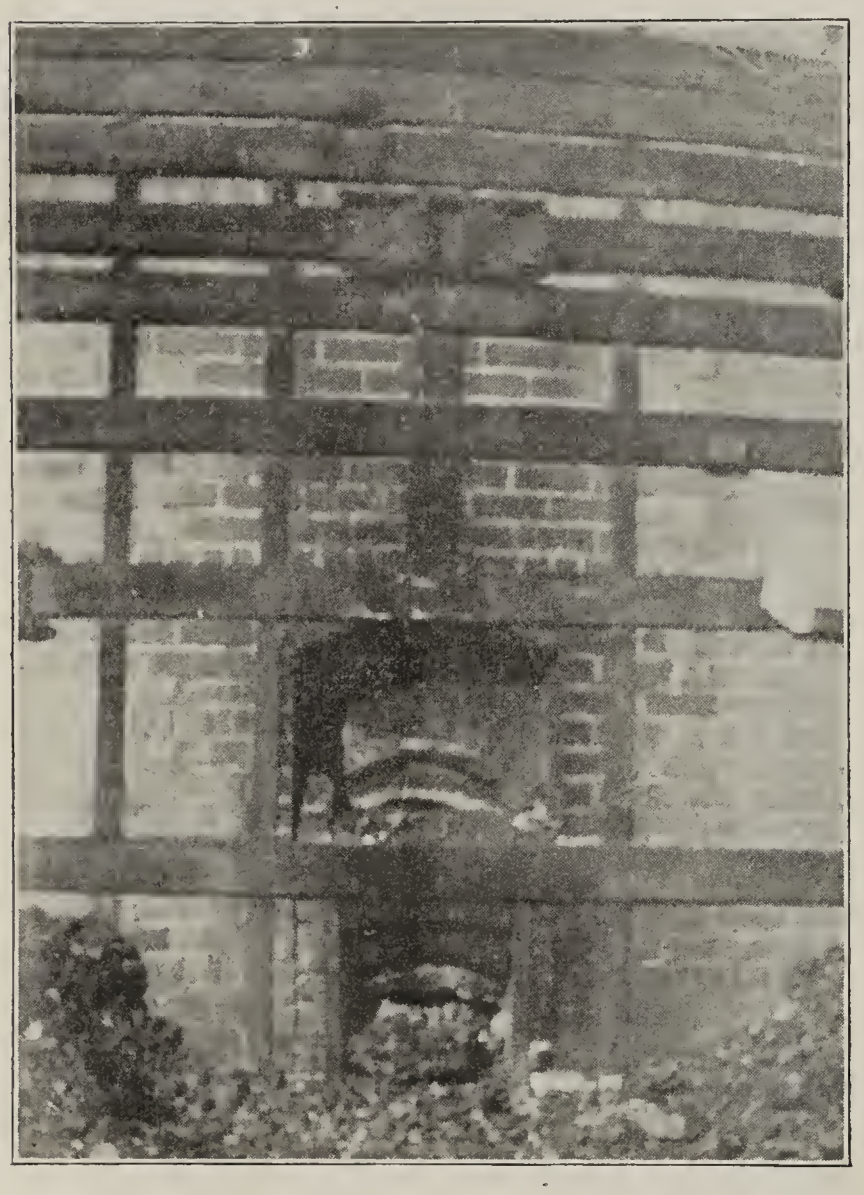
RISE OF CROWN SHOULD BE CONSIDERED

Another very important point in kiln construction is the crown. The rise of the crown of the kiln described in this article is seven feet seven inches. This is a good average rise for a kiln of this type, but it is not necessarily an arbitrary figure. The flatter the kiln crown can be kept with safety, the more efficient the kiln will be with regard to fuel consumption. With glazed ware, which is only set six feet high as is the case where webbed material is made, it is the policy to construct the crown with a lower rise. This prevents the heated gases from rising too high above the ware, which results in large radiation losses. It also prevents the heating up of a large space of air and excessive brick work. The heat distribution is much better in a kiln with the flatter crown and in kilns of high crowns the top ware has a tendency to overburn before the heat can be soaked down sufficiently to completely vitrify the bottom ware. However, care must be taken not to reach the other extreme and flatten the crown too much, since it would have a tendency to sink in under its own weight. In fact, the lower the crown the shorter its period of usefulness. I would suggest that the rise be not less than six feet for ware set only six feet high, while for sewer pipe kilns where the ware is always set eight feet high, the rise should be as low as possible and still be safe.

METHOD OF STARTING CROWN

It will be noticed that the crown of this kiln does not start suddenly from the wall with the conventional "skew back." Instead, the crown is started in a gentle curve from the wall of the kiln. This method of construction helps to minimize the powerful end thrust which a crown always exerts against the kiln wall. The thrust of the crown by this method of construction is resolved into two components, one horioztnal and at right angles to the kiln wall and the other vertical, which thrust is absorbed by the wall itself. Where the skew back is used, the crown thrust is almost horizontal, which necessitates the use of heavy kiln bands, and is detrimental to the kiln in general.

While the drawing calls for nine inch brick for the crown, I would advise the use of twelve inch brick if it can be obtained. The heavier the crown brick are, the lower the radiation losses, and but a few burns will be required to repay in fuel saving for the greater initial outlay entailed in the use of the large brick. The brick should also be of as good a grade of fire brick as can be obtained, for it is the crown which suffers a great deal from the heat treatment.



The Life of a Kiln May Be Materially Prolonged by Using Vertical Iron Strips in the Manner Shown in Above View.

Some sort of platting or covering should be used to reduce radiation losses. Frequently, ashes, clay or kieselguhr is used between the crown proper and the platting, as a non-conducting material, and this helps materially to reduce the loss of heat due to radiation. I generally use a two inch layer of ground fire clay as the non-conducting material, and then a layer of brick four inches thick for the platting. By using this form of construction, radiation losses are lowered considerably and a good, tight crown is obtained.

Since all modern types of kiln construction call for cooling holes in the kiln crown, it will be unnecessary to dwell at length on this point. These openings are very necessary for obtaining efficient cooling. Greater speed is obtained and defects due to cooling are less apt to occur.

The bands used for kiln bracing should be at least six inches wide by one-half inch thick. The drawings show quite clearly how they are applied to the kiln in question. The loops shown are simply a home made proposition and are easily made and applied. There are a number of patent band lugs and loops on the market, which are very good and may be used to advantage. The use of vertical iron strips will be noted. They are placed around the entire kiln, being held in place by the kiln bands. These are used to prevent the kiln from bulging out from under the bands, due to expansion and contraction in burning. Any old band iron will serve for this purpose and they certainly tend to lengthen the life of the kiln wall. An added improvement in kiln band construction may be found in the use of iron loops supporting the bands. They act as a brace for the bands to rest upon and prevent the band from dropping off of the kiln wall in case one breaks.

* * *

Prominent Ohio Valley Clay Products Manufacturer Dies

William B. Goucher, aged sixty-two years, one of the best known clay plant operators in the upper Ohio Valley, died at his home in Toronto, Ohio, March 18, of acute pneumonia.

Mr. Goucher was born in Toronto, and early in life became identified with the sewer pipe industry with which he was closely associated up to the time of his death. For many years he was interested actively in the old Calumet and Empire sewer pipe works at Toronto and later with the Goucher, McAdoo & Co., at Brazil, Ind., which plant was later absorbed by the American Sewer Pipe Co. Later on he became associated with the National Fire Proofing Co., whose main offices are at Pittsburgh, Pa. When the American China Co. was formed at Toronto to manufacture dinnerware, he was identified officially with that corporation. He also held an interest in the Means Foundry Co., at Steubenville, Ohio, and the Toronto Ferry Co. In later years he devoted almost all of his time to the interests of the Northwestern Clay Manufacturing Co., at Aledo, Ill., of which he was treasurer, and the Peerless Clay Manufacturing Co., whose works are at Port Homer, Ohio.

Mr. Goucher is survived by his widow and two sons, Edward A. Goucher, of the Peerless Clay Manufacturing Co., and Charles R. Goucher, with the Northwestern Clay Manufacturing Co. His two brothers are Samuel B. Goucher, of the National Fire Proofing Co., and George W. Goucher, of New Windsor, Ill.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Take Proper Care of Your Electric Motors

The large electric motors used for driving various machinery on clay plants are generally located in places where it is extremely dusty, and as a result the motor becomes coated with dirt. This should be blown away at frequent intervals or depreciation will be relatively much greater. Another important point to take care of is the waterproofing of the motor. According to H. R. McCune, superintendent of the Decatur (Ill.) Brick Co., this should be done at least once each year, using some good waterproofing compound. The life of a motor is increased to a remarkable degree by taking care of it in this manner, states Mr. McCune.

⁂

Proper Feed Water Important.

Much heat is wasted by dirty boilers, and the cost of cleaning in most plants is considerable. Using distilled water as boiler feed should be advocated whenever possible. In large plants, the condensate from the condensers of the main units could be used to condense the exhaust steam from the auxiliaries, and all the make-up water obtained from a multiple-effect evaporating system, or flue-gas evaporators working under vacuum. In other plants, more attention should be paid to treating the feed-water.

Properly treated feed-water will not only improve the efficiency of a boiler as a heat absorber, reduce the cost of boiler cleaning and repairs, and increase its life, but will greatly increase its safety, since most boiler explosions and accidents can be traced to unsuitable boiler feed-water.

⁂

Get a License Before You Use Explosives

Nearly every user of explosives knows that Uncle Sam has passed a law requiring all users of, and dealers in explosives to take out a government license. To those who may not be clear on the matter a little information may be in order:

The object of the law is to keep dangerous explosives out of the hands of plotters and alien enemies of the country.

Before a dealer can sell any explosives, he must have a license, and before a customer can purchase any explosives, either from a dealer or a manufacturer, he must have a license. Before a customer can secure delivery from a railroad company of any explosives shipped to him, he must show the railroad agent his license.

This license matter is, however, a very simple proposition. It need not deter anyone from buying or using explosives if their motives are honest. The license costs only twenty-five cents and can readily be obtained from licensing agents located in every state and every county. As a general thing, county clerks are the proper persons from whom licenses can be secured.

However, anyone having any difficulty in locating a licensing agent can obtain the name and address of the nearest agent by writing Bureau of Mines, Explosives Division, Washington, D. C. Dealers stocking explosives will, of course, be able to give customers addresses of licensing agents.

In order to save time, it will be well for any person desiring to purchase explosives to obtain his license before going to his dealer to place an order. If he intends ordering direct from a manufacturer, he must necessarily have his license before ordering, because a certified copy of the license, which will be furnished by the licensing agent, must accompany his order.

⁂

Why Your Dryer May Not Work Efficiently

A superintendent of a clay plant told a member of the editorial staff of *Brick and Clay Record,* the other day that he was experiencing trouble in drying his brick in a steam dryer and did not know at first what cause to attribute it to. Upon investigation he noticed that the steam pipes lying on the floor of the tunnels were implanted in clay in such a manner that there was no opportunity for circulation of the air thru the pipes whatever, hence most of the heat had to come by radiation and very little by convection. After clearing away the dirt and debris so that the air could circulate around the pipes the dryer again worked very satisfactorily.

⁂

Burning Brick to a Dark Color.

To burn a whole kiln of face brick to a dark color with reasonable uniformity, the brick should be set on the flat side. A long period of strong reduction is followed immediately by rapid up-draft cooling, which should be done in a non-oxidizing atmosphere. With ordinary down-draft kilns, of moderate large size, the cold air entering thru the setting by natural draft, cools the kiln more nearly uniformly, than when admitted otherwise, whether allowed to escape naturally, thru openings provided, or drawn out by stack or fan. With this sort of cooling the greater part of the darkest brick should be in the very bottom courses, and a very large part of the kiln should be nearly uniform.

⁂

Be Sure to Write for This Bulletin

The Bureau of Mines, Department of the Interior, after several years of experiments in fuel combustion in a special furnace, makes the announcement that from the results it is possible to design a furnace with considerable more assurance as to its capabilities than has heretofore been possible.

Starting with the analysis of the coal to be used and the rate at which it is to be burned, the furnace dimensions in feet and inches can be designed with a reasonable assurance of obtaining a desired degree of completeness of combustion.

The bureau has just made a report on this subject

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For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

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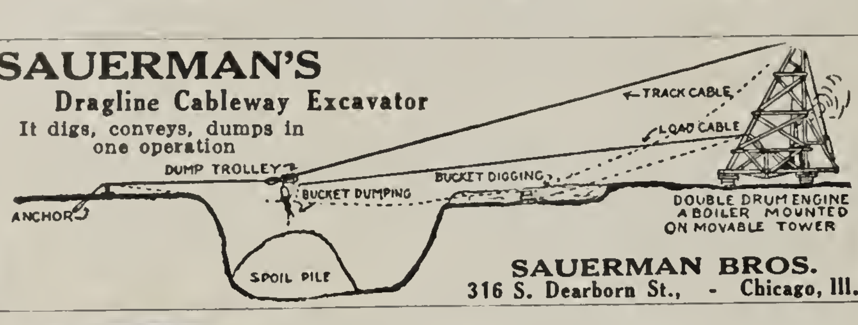

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—*The Little News.*

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500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
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Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
To Reach Hotel Chelsea.
From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

Bulletin 135, "Combustion of Coal and Design of Furnaces," by Henry Kreisinger, C. E. Augustine, and F. K. Ovitz. The publication marks a period in work approved in 1906 by a National Advisory Board appointed by the president to advise the government concerning fuels. The bureau proposed to conduct such experiments as would make it possible to design fuel-burning furnaces on a rational basis rather than by the cut and try methods of the past. The process carried on in the combustion space is influenced by many factors, the most important of which are the volume and shape of the combustion space; the kind of coal used, especially the character and amount of volatile matter it contains; the rate of firing; the quantity of air supplied over the fuel bed; the rate of mixing the air with the combustible rising from the fuel bed; the rate of heating the coal; and the temperature in the combustion space.

The qualitative effects on the rate and completeness of combustion of many of these factors have been known for a long time; but the quantitative data, presented in definite units, of seconds, pounds, feet, or percentages, have been lacking. To obtain such definite information a study of combustion in the space beyond the fuel bed was undertaken, and the results of extensive tests are given in this bulletin. About 100 elaborate tests were conducted in a special furnace using three kinds of coal—Pocahontas, Pittsburgh, and Illinois—and at rates of combustion covering the full range found in practice. These are believed to be the most extensive tests of the kind ever undertaken.

GOOD INFORMATION FOR CERAMISTS, TOO

While the bulletin is especially for those interested in the design or reconstruction of fuel-burning furnaces, it contains much of interest to the general engineer interested in fuel problems. Some of the statements sure to arrest the attention of the interested engineer are as follows:

The size of the combustion space required appears to be directly proportional to the percentage of oxygen in the moisture-free and ash-free coal.

The percentage of excess air that gives the best results varies with the size of the furnace and the kind of fuel. This fact explains why in one plant the highest efficiency may be obtained with 14 per cent. of CO_2 in the gases, and in another plant with only 10 per cent. of CO_2.

There is a definite relation for each coal between the excess air supply and the percentage of CO_2 in the furnace gases.

Soot is formed at the surface of the fuel bed by heating the hydrocarbons in absence of air. It is not formed by the hydrocarbon gases striking the cooling surfaces of the boiler. As a matter of fact only a very small trace of the hydrocarbon gases ever reach the surface of the boiler. Hydrocarbons that do so are prevented from decomposition by the cooling effect of the contact. The cooling surfaces do not cause the formation of soot; they merely collect soot and prevent its combustion.

It seems that most mechanical stokers are smokeless not because they burn the smoke, but because they burn the coal in such a way that very little soot or smoke is produced. Hand-fired furnaces are smoky because soot is produced in or near the fuel bed, and can not be burned in the limited combustion space of the furnace.

Copies of this publication may be obtained free of charge by addressing the Director of the Bureau of Mines, Washington, D. C.

"Anaconda" Method of Making Silica Brick

In 1911, Greaves-Walker presented a paper to the American Ceramic Society in which he described the method of manufacturing silica brick at the plant of the Amalgamated Copper Co., of Anaconda, Montana. The method used in making the brick at this plant differs considerably from methods now in use and it no doubt would interest all refractories manufacturers to know about this system.

The method of preparing the batch is the same as is ordinarily followed except that more water is used so that the corners of the moulds could be filled more easily. A three brick mold was used and the molder simply slopped the mix into the molds and cut off the excess with a wire bow. A boy then took the mold from in front of the molder and replaced it with an empty one. The brick were dumped upon pallets and carried to the drying racks. The brick were permitted to remain on the racks until they were hard to dent with the finger, after which they were put thru a repress. From the off-bearing belt of the repress they were again placed upon pallets, and the pallets were placed in a permanent dryer where they remained until bone-dry.

By submitting the brick to this high pressure the water was forced from the interior to the surface, carrying with it the fine particles of silica. This gives a nice smooth finish to the surface, which together with the sharp corners and edges obtained in the repressing process, produces a brick of excellent appearance. Contrary to what might be expected, the breaking in the repress, of the bond produced by the preliminary setting of the line does not in any way affect the final bond of the thoroly dried ware. When the brick were thoroly dry, they were extremely hard, so hard in fact, that it was possible to drop them on their ends from a height of three feet without breaking them. This, of course, makes the breakage between the drier and the kiln very light.

The structure of the brick was sufficiently dense as to be burned hard enough at a heat treatment as low as cone 9, (2390 deg. Fahr.). With this heat treatment, the brick are hard enough for any purpose and have the particular advantage of being as easily cut as a soft burned fire brick.

Some of the advantages obtained by this process of manufacture, as outlined by Greaves-Walker are: It was found by actual test that the repressed brick weighed from two to four ounces more than those made by the pounding method. This means that from two to four more ounces of material are pressed into the same number of cubic inches. This can have but one result: a denser, closer grained brick, both before and after burning. With the brick made by the old method, it is necessary to use a very high heat treatment (cones 16 to 17), in order that the line may become sufficiently active to bond the particles of an open body, whereas, by making the raw body denser, a lower heat (cone 9) can be used.

* * *

Mexico Plants Busy

Several of the larger brick manufacturing plants in Mexico have recently resumed operations, according to advices received from Monterey. It is stated that in the larger cities considerable construction work is in progress, and that the demand for brick is constantly increasing. The Tampico building activities are unusually brisk, due to the extensive oil operations which are being carried on there and in the adjacent producing fields.

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the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,

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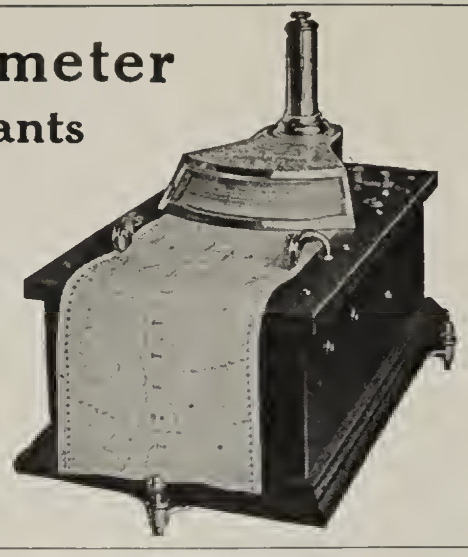

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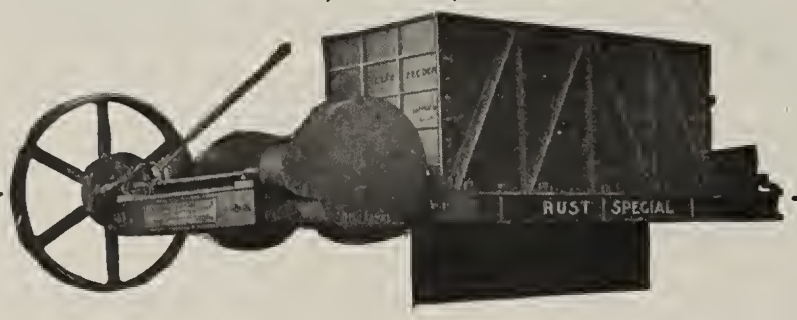

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
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How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

IN the WAKE of the NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

Thomas Smith, superintendent of the erection department of the Northwestern Terra Cotta Co., Chicago, Ill., died at his home on March 5, after a short illness.

William L. Greeley, of the Alphons Custodis Chimney Construction Co., 95 Nassau St., New York, N. Y. died at his home in that city on March 8.

Joseph Kennedy, of 73 Poplar Street, Trenton, N. J., engaged in pottery work, and formerly associated with the Thomas Maddock Sons' Company, Trenton, is a member of the 502nd Engineers in France.

Omer Smith, of North English, Iowa, will take the place of Dan Morey, Jr., of the Morey Clay Products Co., Ottumwa, Iowa, who has enlisted in the Balloon Division of the Signal Corps.

Gottlieb Miller, of Cannelton, Ind., has returned to his home in that city from Clymer, Pa., where he was employed for several months at a large sewer pipe plant. He is now recovering from an injury to his back.

Thomas E. A. Daniels, one of Leavenworth county's oldest settlers, died suddenly at his home in Kickapoo, Kans. on March 1. Many years ago Mr. Daniels established a brick plant at Kickapoo, and the home in which he died was built of material produced at that plant.

Joseph Coleman, who was formerly connected with the City Engineer's office, Louisville, Ky., has been added to the sales force of the Louisville Builders' Supply Co. Mr. Coleman is an engineer, and understands the needs of builders and contractors, and is a valuable addition to the force.

Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, Cleveland, Ohio, has returned from Washington, D. C., where he attended a meeting of the Highways Industries Association, of which he is a member. More recently Mr. Blair has been giving attention to private business in Bloomington, Ind.

John H. Ward, aged 86 years, a retired brick manufacturer, died at his home in Wilkinsburg, Pa., on March 5. He was born in Ireland and came to this country in his early manhood, residing at Wilkinsburg for more than half a century, where he founded the John H. Ward & Sons Co., manufacturers of brick and dealers in stone.

Charles William Flentke, who for many years was superintendent of the Crown Pottery in Evansville, Ind., died a few days ago at his home in that city, at the age of 64 years. Mr. Flentke was born at East Liverpool, Ohio, but spent most of his life in Evansville. He started to work for the Crown Pottery when a young boy and remained with this company up to the time of his death. He is survived by the widow and four sons.

A. P. McDonald, sales manager for the P. Bannon Pipe Co., Louisville, Ky., has been away about two weeks on a trip thru Kentucky and Tennessee, where he is calling on

the company's retail connections. M. J. Bannon reports that both of the company's local plants are operating full, there being a good demand for hollow tile, which is being used by the government in warehouse building, also for sewer pipe and other clay products.

David W. Mattern, a veteran brick manufacturer of Allentown, Pa., died, aged 76 years. He was a native of Allentown and in early life served an enlistment as a member of Company D, 128th Regiment and was seriously wounded at the Battle of Antietam. Later, he took over the brick manufacturing business of his father, and conducted it for many years until he turned over the plant to his two sons, the present proprietors.

Henry C. Kafer, a retired brick manufacturer, formerly of the firm of Kafer & Ivans, died at his home in Trenton, N. J. on March 10, after a short illness. Mr. Kafer was 74 years old, and had spent practically all of his business life in the industry, beginning at the bottom, as bookkeeper in the brickyards of the late Peter Fell, where he acquired his first knowledge of the brick business, and working his way to the top and a position of influence. Mr. Kafer was one of the most prominent men of Trenton and altho of a retiring disposition, was frequently before the public eye because of his tours of the world, being an ardent traveler.

California

The city clerk of Los Angeles County, Cal., is asking for bids on vitrified clay pipe for the construction of a sewer system for the city of Seal Beach.

Eugene Corrigan, of the Stockton Fire & Enamel Brick Co., San Francisco, Cal., just shipped a big order of fire brick to the Merchants Fleet Corporation. J. T. Roberts, of the same firm will spend the major part of his time this month at his factory in Stockton, where he is making a few alterations in the plant.

The Atlas Fire Brick Co. was incorporated March 3 in Los Angeles, Cal. The firm members are M. I. Powers, N. B. Harris, E. S. Patterson and M. M. Harris. The capital stock is $50,000. The plant has been established for the manufacture of magnesite, silica, chrome ores and clay, including tile and crockery.

Articles of incorporation were filed in Oakland, Cal., this week by the Coast Fire Brick Co. The concern will manufacture products of magnesite, silica and clay, including crockery and tiles. The capital stock is given at $22,500, and the place of business, Oakland. The directors of the new concern are C. E. Hall and N. Fitzpatrick, of Oakland, and S. A. Myhre, of Berkeley.

Frederick R. Turton, president of the Refractory Magnesite Co., 817 Merchants Bank Building, San Francisco, Cal., has received several government orders from Washington recently for his brick products. Altho the plant is working to full capacity it is a long way behind in its orders, and Mr. Turton is considering enlarging the kiln space, provided he is able to secure a force of men sufficient to work it.

The Lincoln (Cal.) Clay Products Co. is entering upon the construction of a large clay refining plant adjacent to its present works, located a mile northwest of the city. A force of men is busy on the grounds, and the machinery for the new plant has been ordered. The company intends to refine clays for various products. M. J. Dillman is president and manager of the company, and has charge of the construction of the new plant.

The Allied Unions Brick Co., recently organized at Oak-

ORIGINAL Boss SYSTEM
COMMON SENSE APPLIED TO
Drying and Burning
ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

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Then write for information and we'll SHOW YOU HOW!

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INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH
SIL-O-CEL
PREVENTS HEAT PENETRATION
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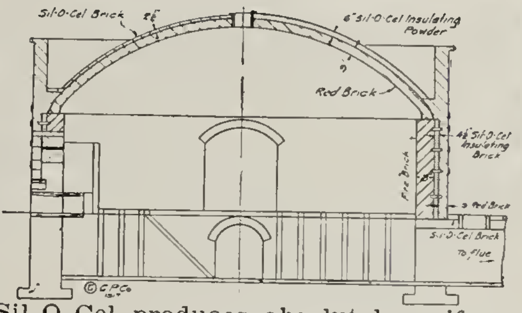
INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

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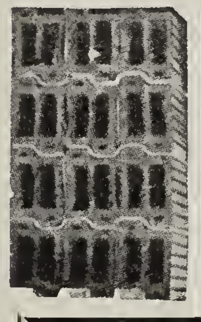

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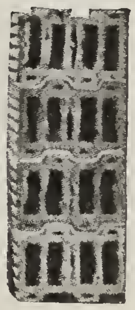

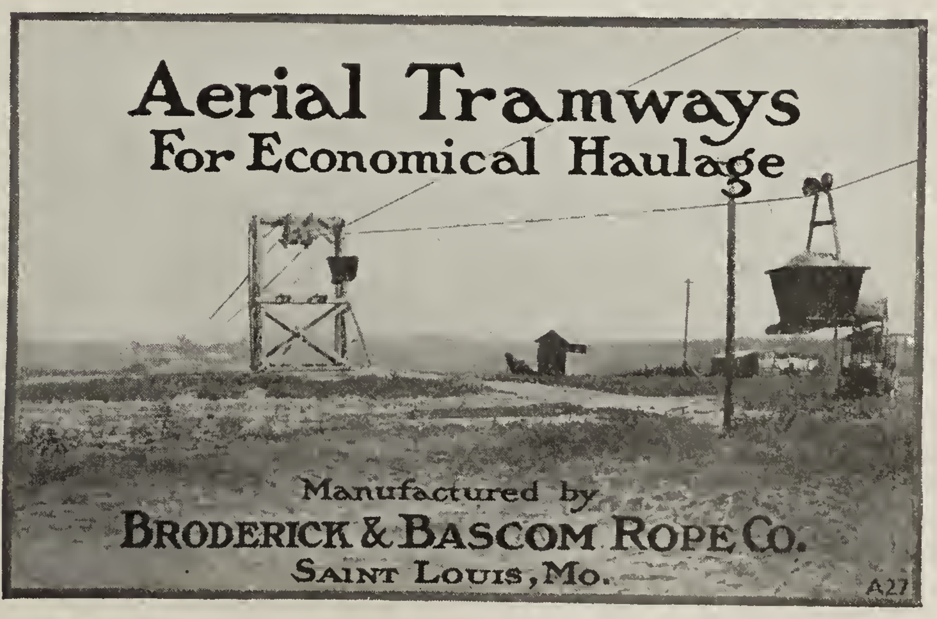

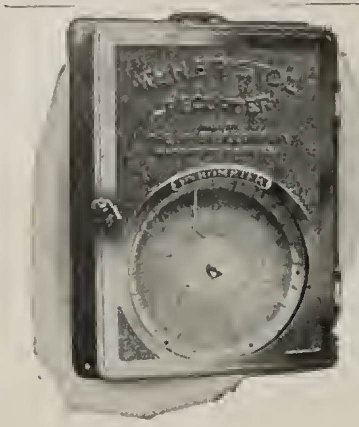

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Recording Pyrometers

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is driven into your belt so firmly that its double grip will not loosen during the life of the belt. It will give steady, satisfactory service, operating on plain drives under heavy loads, or over idler pulleys and serpentine drives.

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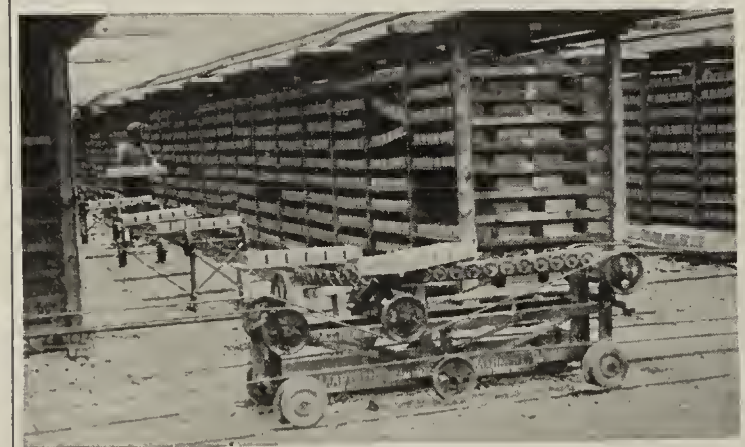

The A-B-C of Cost Saving

—

Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"

MARINETTE IRON WORKS

MARINETTE, WIS. C. J. ANDERSON, Prop.

land, Cal., and which has opened offices at 318 First National Bank building, has begun operations at its plant at Richmond, Cal., under the direction of E. E. Dooley, general manager. The company's clay and shale deposits are so situated that the material can be brought to the plant by gravity at a low cost. Plans are under way to add machinery for making hollow tile.

Reports of the bids for the State Agricultural Building to be erected at the State Fair Grounds, Sacramento, Cal., have just arrived at the office of W. H. Edwards, manager of the Brick Manufacturers' Association. Among the bidders were N. Clark & Sons, Gladding, McBean & Co., and the Steiger Terra Cotta & Pottery Co. The building, the appropriation for which is $300,000, is to be of brick with a terra cotta tile roof.

The magnesite mines in the Portersville, Cal., district, which have been shut down for several weeks, will resume their work with full crews shortly. Enforced idle days at the mine, which affected between 600 and 700 men, were due to the fuel famine in the East, which resulted in priority orders for shipping on trans-continental railroad lines and the consequent refusal of facilities at the terminal for magnesite ore.

A mass meeting of the membership of both the Builders' Exchange and the Building Industries Association of San Francisco, Cal., assembled recently in the New Call building to discuss the advisability of consolidating the two associations with a view of cutting down expenses and of increasing the benefits which should be derived from an association of builders. The vote for consolidation was unanimously agreed upon. A committee was appointed to devise ways and means to accomplish the objects of the meeting. About sixty firms hold membership in the two associations, including the Pratt Building Materials Co., the Funsten Clay Products Co., and the Stockton Fire & Enamel Brick Co.

The 100 Per Cent Club, which was organized about two years ago for the business men of San Francisco, Cal., on a purely co-operative basis, and which includes among its members many representatives of the brick and clay trades, is now occupying its new quarters in the arcade of the Monadnock building. The members are now installing an exhibition, which will be ready for the public on or about May 1. The various building material, fire brick and sewer pipe men are busy these days preparing their samples for the exhibit. The members are deriving big benefits from the club, especially at the present time. It happens that there are numbers of representatives of foreign countries in town, many of whom visit the centrally located and attractive rooms of the club. The members plan to make the sample display a permanent one, and it is expected that much added publicity will thus be attracted to the products of the different companies represented in the club.

Illinois

The Advance Terra Cotta Co., Chicago Heights, Ill., is planning the expenditure of $25,000 in the erection of new kilns and other improvements to the plant.

The resumption of work on street paving at Grayville, Ill., will be started in a short time. The town of Grayville started last fall to build brick streets and the improvement will add much to the appearance of the town.

J. W. Bostick, president of the West Salem Vitrified Brick Co., at Grayville, Ill., reports that arrangements are being made to operate the brick plant this season. The plant has been put in good shape and Mr. Bostick anticipates a very busy season.

Indiana

The Edgerton (Ind.) Clay Products Co. has been incorporated for $50,000, to manufacture drain tile. The directors are Harold Meyers, Ames K. Meyers and Charles Asmus.

A number of improved streets will be built at Evansville, Ind., during the present year and it is expected that some of these streets will be constructed of brick. Evansville has several miles of brick street, some of them having been put down twenty-five or thirty years ago, and are as good as when the brick were laid.

It has been announced that the State of Indiana will require very little new material in rebuilding the reformatory at Jeffersonville, Ind., which was burned a few months ago, as it is planned to manufacture the brick in the reformatory brickyard, which is just outside of the walls of the institution, and which was not damaged in the fire. Of course new steel work and timber will be required, but practically all of the brick will be made on the premises.

Iowa

The Atlantic (Iowa) Building Supply Co. has been incorporated with a capital of $30,000, to manufacture and deal in all kinds of building materials, including brick, tile and other clay products. J. A. Nelson is president of the new company and M. B. Nelson secretary-treasurer.

Fire of unknown origin completely destroyed the main factory buildings and machinery of the Morey Clay Products Co., Ottumwa, Iowa, of which D. F. Morey is secretary-treasurer. A force of men had been working ever since the cold weather let up, rebabbitting and going over all of the machines and were finishing up on the brick machine, preparatory to starting operations on Monday, March 18, when the fire took place. The plant was fully covered by insurance and the company also carried a use and occupancy policy to indemnify it against loss of operation. The plant will be rebuilt as soon as new machinery can be procured and the buildings re-established.

Kentucky

Trade with Kleymeyer & Klutey Brick & Tile Works, at Henderson, Ky., has been very good during the past month.

The P. Bannon Pipe Co., Louisville, Ky., has been making a few alterations at its Fifteenth street plant, having recently taken out a permit for these improvements. The company has also installed a new light car for the use of the sales department in handling local business.

A. E. Livingston, of the Louisville (Ky.) Builders' Supply Co., says: "There is a good demand developing for sewer pipe, and I believe that this line is going to be very active, as the city is undertaking a good deal of street work, principally rebuilding, etc. There is a fair demand for common building brick, flue lining, fire clay and other clay products, and all told the situation looks promising. Elimination of one or two concerns from the field will also result in business being better for the remaining houses."

The Louisville (Ky.) Brick & Tile Co. reports that it is about sold up on drain tile, which is in tremendous

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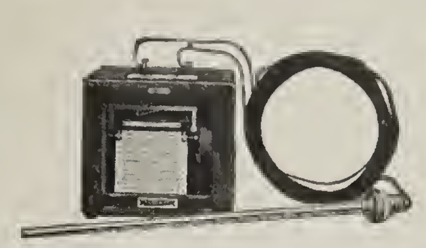
Thermometers of all kinds for home and general use.



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Coal Costs Lowered 10%

GUARANTEED

—if you will install under your boilers

Cyclone Boiler Grates

we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

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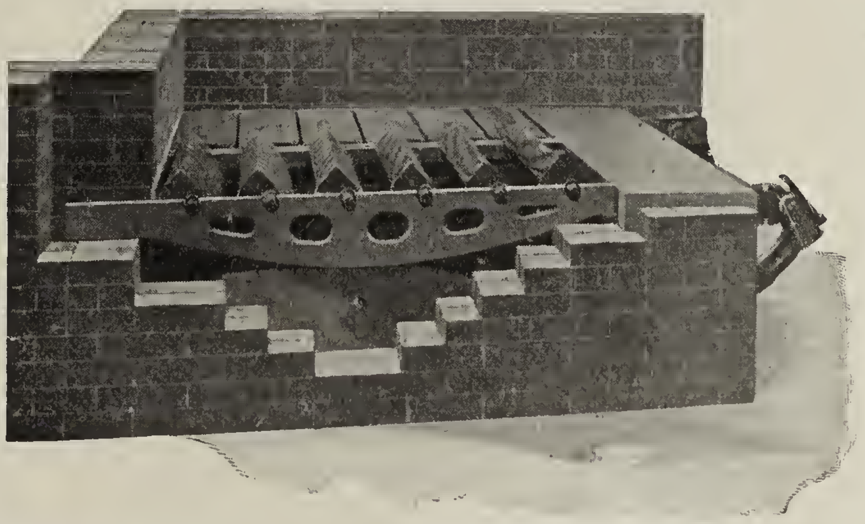

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Simple in operation, accurate in its work, and from six to ten times as rapid as old methods.

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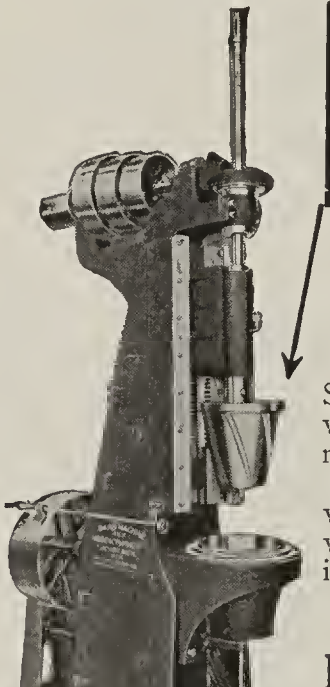

demand for draining bottom farm lands. This is one line that the government is anxious to see delivered, as it means reclamation of land and large crops. So far the drain tile demand has been larger than during any spring on record, but will probably fall off later on as the shortage of labor will result in farmers having to use all available forces in handling crops. The company reports that locally the demand for common brick is fair only, but that there is a good government demand for tile, brick, and other clay products.

The coal situation is showing vast improvement, and the brick plants in the Kentucky district are having no trouble in obtaining supplies. However, such contracts as were made last season are about to expire, the expiration date generally being set for April 1. So far the fuel administration has set no time or no new prices for stocking up, or placing contracts, but it is believed that this will be done within a few days. According to some of the leading coal operators, the chances are that a price of $3 at Eastern Kentucky mines; and $2 at Western Kentucky mines, car lots, mine-run, will be made effective. The usual differential between Eastern Kentucky and Western Kentucky coal is seventy-five cents to a dollar.

The effort of the Government to restrict building operations to essential work during the remainder of the war is already having some effect on the general situation in Kentucky. However, it is probably hurting the clay products manufacturers less than the retail lumber trade, as plant additions are very essential, and most of this sort of work represents brick construction. There is a very active demand for all sorts of fire brick, tile and drain tile, while sewer pipe is far more active than it has been. The transportation situation is showing improvement very slowly, but it is believed the situation will be much easier in thirty days. The coal supply is much better, and little trouble is being experienced on this score. Collections are generally good.

J. H. Bell, sales manager of the Louisville (Ky.) Fire Brick Works, reports that the company has more than it can do, and is turning down commercial business right and left in order to supply government and indirect government needs. Much of the latter demand is from the steel and iron mills and foundries, which are on the preferred list, and have to have material in order to supply government needs. Glass works, potteries, etc., are on the non-essential list. Getting cars to make shipments is a very serious problem, both at Louisville and at the Eastern Kentucky plant in Carter county. At the latter plant a requisition has to be placed even for cars in which to ship government orders, and special permits have to be obtained. Mr. Bell states that government orders are not being given any priority due to the heavy movement of government supplies. Locally, shipments are made somewhat easier, but embargoes are interfering considerably with shipments into Eastern territory.

Announcement has just been made by the Union Cement & Lime Co., of Louisville, Ky., dealers in lime, cement, face brick and general building supplies, to the effect that it has been decided to dissolve and liquidate. The company has been in business for more than fifty years and has a capital of $50,000. For the past twenty years it has been located at 413 West Main Street, Louisville, and prior to that time operated large quarries, cement mill, etc., at Salem, Ind. About three years ago it entered the face brick business in a considerable way, opening a high class display room in the Starks building, where it showed lines of some of the leading manufacturers of the country. Leo M. Parsons was engaged as sales manager, and the company featured the "Hy-Tex" line, which Mr. Parsons later carried to the Tyler Building Supply Co. John L. Wheat, president of the company, is one of the oldest business men on Main street, and has decided to retire in spite of the fact that the company is in excellent condition. Other officers are Allen R. Carter, vice-president, and W. J. Steinhauer, secretary-treasurer.

The transportation situation in Kentucky has been chaotic during the month. In February a considerable improvement was shown in the southern car supply. However, embargoes were lifted as far East as the Pittsburgh-Buffalo line, and movement of cars from the South became so heavy that the Southern lines were later forced to place embargoes against cars leaving their lines, these embargoes applying to the Cotton Belt, Mobile & Ohio, Iron Mountain and Illinois Central. Some have since been lifted in part. Cars shipped under load to the East have been drifting back very slowly due to the government's attempt to move the western corn crop to the seaboard for export. Empties have been moved steadily to the West instead of the South, and southern lines have been called upon to deliver additional empties at Louisville. The Southern Railway recently notified the shippers on its lines that they could not reload empties as the government had ordered the road to deliver 400 empty box cars to the Big Four, at Louisville, to move West for handling corn, and that the shippers would have to wait their turn on car supplies.

Louisiana

The Michel Brick & Lumber Co., Inc., with offices at 925 Whitney Central Bank building, New Orleans, La., has been organized, with E. N. Michel as president. Mr. Michel for twenty years was manager of the Salmen Brick & Lumber Co., of that city, and has handled a large number of building material contracts. The new company already has several large contracts booked.

The Chamber of Commerce of Shreveport, La., is striving to bring to that city the new brick plant of the Union Brick Co., manufacturers of paving and building brick, at Iola, Kans. The proposed factory will have a capacity of more than 100,000 brick per day. Frank C. Nicholson, president of the Union Brick Co. is giving Shreveport favorable consideration because of its natural gas supply, believing that natural gas will prove a more satisfactory fuel than coal.

Massachusetts

George A. Parry, president of the Massachusetts Brick Manufacturers' Association and head of the Parry Brick Co., Boston, Mass., has been ill at his home in Cambridge. Tonsilitis kept him in bed for some days while an attack of water on the knee added to his discomforts. At last reports, however, he was improving rapidly and expected to be back at his desk before long.

Brick manufacturers in Massachusetts see in the proposed $50,000,000 government storehouse project at South Boston, prospects of a big demand for brick and other building materials. An inquiry for 6,000,000 brick in this connection already has been reported in the market. Other spring building that is expected to start soon, including a number of large school houses, several hundred homes for Quincy, Mass. shipyard workers, and similar projects already pro-

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without writing for information about the Beighlee Pyrometer.

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BRICK AND CLAY RECORD

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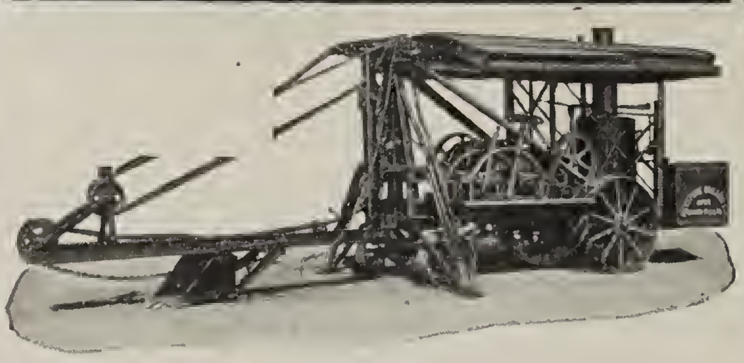

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from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
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STEAM SHOVELS

No. 5 Drymore Truck

The loaded pallet is picked up from and deposited upon the ground or floor.

No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.

Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—
FOR LESS

The Drymore System **Galion, O.**

vided for, gives indications that the present dullness in the brick market may not be long continued.

Missouri

Fire destroyed 5472 bales of straw valued at $1,218 in the yards of the Laclede-Christy Clay Products Co., St. Louis, Mo. on March 5. A spark from a switch engine caused the blaze.

Prices at Kansas City, Mo., during the past two weeks have remained steady. There is little change expected, even tho the demand has increased perhaps a little more than the dealers at first anticipated. Common brick has remained steady at $11.00 per thousand.

The Eadie Building Supply Co., Kansas City, Mo., has been meeting with a nice trade during the past two weeks. The demand for brick and building tile has shown a decided increase and the company has secured a goodly portion of this business.

The Walter S. Dickey Clay Manufacturing Co. reports that its plant at Kansas City, Mo., has been working to capacity for some time. The company declares that there is a big increase in the demand for clay drainage pipe and hollow building tile.

The plants of the Western Paving Brick Manufacturers' Association have been working close to capacity all during the month. The association reports that the orders which are now on hand and those that have been coming in are such that the plants are insured another big season in the Kansas City, Mo., territory.

F. C. La Fountain, of the Reliance Brick Co., Kansas City, Mo., reports that business has been exceedingly good of late. Mr. La Fountain declares that the spring season here has opened up much better than might at first have been expected. He predicts that the business will show a goodly increase over that of a year ago during the entire spring and summer seasons. This company has taken the exclusive sales agency for the Kansas City Brick Manufacturing Co. Their plant, which was recently erected close to Kansas City, has been operating for some time and Mr. La Fountain reports that from present indications the plant will operate all season close to capacity.

As far as the prospects for summer operation of the Kansas City, Mo., plants is concerned, viewed from the standpoint of the fuel situation, there will be little difficulty encountered during the summer season. There is at the present time a supply of soft coal and coke in this territory far in excess of the present demand. The plants are having no difficulty in securing an ample supply and many are taking advantage of the opportunity to store a supply for several weeks in advance. The mines in the district have only been working a portion of the time as the local market, thru which the production of this territory is handled, have been overrun with coal since the weather has caused the demands of the public to decrease.

During the past two weeks the brick business has shown a great deal more activity in Kansas City, Mo., than it has displayed for some time. This is perhaps due entirely to the opening of the spring building season. The permits being taken out for the erection of new buildings have shown a nice increase and the percentage of materials specified is well in favor of brick. Only a few large buildings are being erected, all of which are of face brick with terra cotta trimmings, the principal

one being the new home of the Kansas City Athletic Club on the site of the old Willis Wood theatre. Most of the building operation in this city is of apartments. The number of permits being issued for the construction of apartments and flats has shown a big increase. It is noticeable thruout the city that there is a decided shortage of this class of rental property and few apartments are vacant; on the other hand, the demand of the renters is decidedly in favor of the apartments, according to a recent statement of the Kansas City Real Estate Board. Most all of the apartments being erected are of brick and this has brought a goodly business to the sales companies in this city.

Nebraska

The Table Rock (Neb.) Brick & Material Co. opened up its brickyard for the season on March 12, and ran out about 30,000 brick. The clay pit was frozen, which somewhat handicapped the work. The company is also making preparations to manufacture hollow tile.

New Jersey

The Standard Brick Co. at Mountainview, N. J., expects to open its plant in the very near future and will operate it as near to capacity as possible with the present labor shortage.

The Old Bridge (N. J.) Enamel Brick & Tile Co. are experiencing considerable difficulty in obtaining both coal and supplies of clay, sand and other materials. Many departments are running short-handed also, because of the scarcity of labor.

The Greenwood China Co., Trenton, N. J., manufacturers of vitrified wares, has awarded a contract to Charles J. Smith, 63 Maple Street, Trenton, for the construction of a new two-story brick addition to its plant, to cost about $6,000. J. Osborne Hunt, Trenton, is architect.

The Mehrhof interests at Hackensack, N. J., have not yet moved toward beginning their business this year. It is a question whether some of the Mehrhof plants at Hackensack and Little Ferry will open at all this season. Lack of orders and difficulty in securing labor are factors which seem to deter the owners from beginning operations.

The Raritan Ridge Clay Co., New Brunswick, N. J., has disposed of its entire holdings to Mr. Lewis Nixon. A portion of this property is within the boundary of the Raritan Ordnance Depot at Bonhamtown, and Mr. Nixon has secured the property in order that the Government may have a clear title to the land it will use.

The Federal Terra Cotta Co., of Perth Amboy and Woodbridge, N. J., is finding a ready sale for its monumental terra cotta, which in many instances is supplanting carved stones. This monumental terra cotta can be made into almost any design and is considerably cheaper than carved stones. The Federal company has been experimenting with a terra cotta gun shell but so far has been unable to find a clay mixture hard enough to serve as the wall of a shell.

The next meeting of the Monmouth (N. J.) Manufacturers' Association will be held at Matawan, N. J., on April 3. The March 6 meeting, held at Keyport, was devoted largely to a discussion of the labor and fuel situation. Many of the Monmouth and Middlesex county clay plants are badly handicapped by the labor shortage, due to so many of their employes taking advantage of the high wages paid by the

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Of Every Description

For Screening Clay, Shale, Sand, Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity, Durability and Satisfaction

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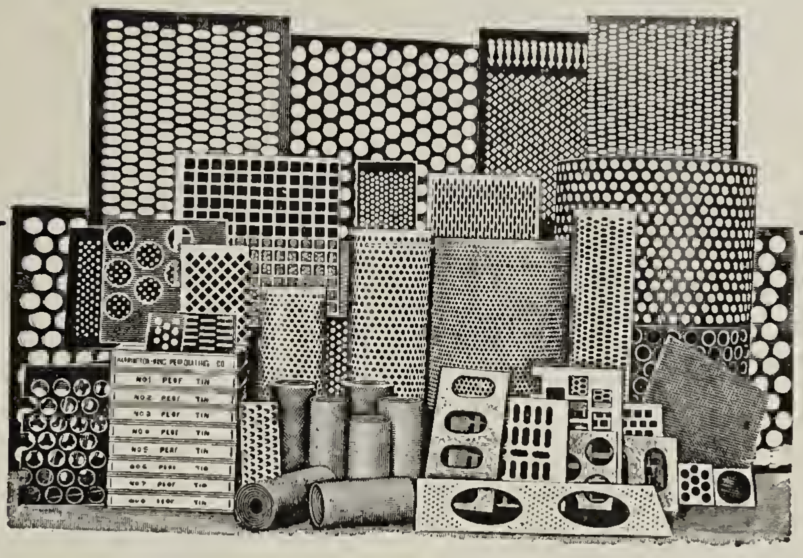

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Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

Write for circular and prices.

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We carry a complete line of high grade chemicals for the clay industry

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ROLLIN'S
BARIUM
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Wins.

Add it to your clay at the pug mill, or the dry pan, it makes the scum producing salts insoluble and harmless to your ware.

Ask for information.

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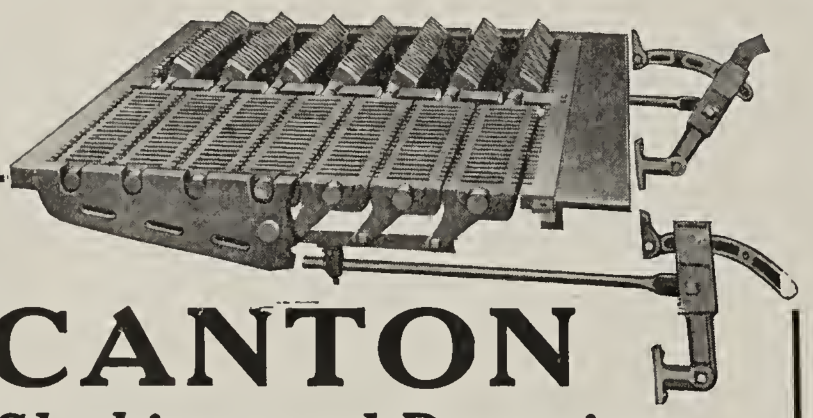

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The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

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munitions plants. In many cases women have taken the places of men on these plants.

One of the most important building operations planned for the coming season in the vicinity of Paterson, N .J., is the erection of a government warehouse for the storage of government property, which will cost approximately $2,000,000. It is understood that the huge building is to be of brick and that the government officials have expressed an intention of making it a permanent storage warehouse, even after the war closes. Work will begin as soon as the weather permits. No details concerning the type of construction, or how many stories it will be, have been given out.

The building situation in Newark, N. J., and vicinity has been quiet for the past two weeks, altho all indications point to considerable new construction work during the spring and summer months. One of the most gratifying features is the growing number of apartment house projects that are rapidly developing. There is considerable activity in this line; plans for five large apartment buildings, to be erected in East Orange, have been filed with the Building Inspector, aggregating $225,000. Housing projects for workers in nearby shipbuilding plants and munition factories are prominent among the current operations.

Representatives of the Signac Brick Co., near Little Falls, N. J., say they are uncertain about what will be done with their plant this year. The plant was operated to about capacity last year, but this year the situation is not so promising. Nothing has been undertaken yet and unless something takes place to greatly change the conditions now governing, it looks as tho the plant will not operate to capacity this season. Much of its product is used in Paterson and Passaic. The large operations in both cities are all finished, with the exception of the government work to come, and therefore the demand for brick has declined.

The committee having in charge the investigation of the question of housing in Paterson, N. J., has held a number of meetings lately. The report of the subcommittee sent to the gathering of representatives from a great number of cities, was heard at the last meeting. It would appear from that report that not many cities have even considered the really important features of housing as yet, altho the need is great. Perhaps the recent announcement by the government that it will commandeer hotels, dwellings and apartment houses near the shipyards, will stimulate some action in places where little has thus far been done.

New York

The Wyomissing Brick Co., recent purchasers of the shale brick works in Catskill, N. Y., has a force of mechanics busy making repairs to the machinery at the works. It is planned to have the plant running in a month.

The Hudson River Brick Manufacturing Co., New York, has disposed of approximately 250 acres of land on the river front at Peekskill, N. Y., to the Weehawken (N. J.) Dry Dock Co., at a consideration said to be in the neighborhood of $75,000.

The market for Hudson River common brick indicated renewed signs of life during the past week, and New York manufacturers and dealers are more hopeful for the future. Announcement has been made of the sale of three barge loads of brick, and, as they were widely distributed, a revival of activity thruout the local territory is anticipated. Prices are firm at the level that has now maintained for the last two weeks, and no further increases are looked for at this time.

North Carolina

The Elk Mountain Brick Co., Asheville, N. C., has been incorporated by Guy Weaver, George C. Shehan and Fred C. Sale, to manufacture brick. The authorized capital is $50,000.

Ohio

The D. E. Shorey Brick Co., Cincinnati, Ohio, has secured some nice contracts recently and in this way has been able to make things move along very well.

The report of the appraisers for the Anders Shale Brick Co., Cincinnati, Ohio, have placed a valuation on the property of $15,540, including its real estate and plant. The plant will very likely be sold on April 25.

Emmet Howard, head of the Columbus (Ohio) Fire Brick Co., reports slightly better shipping facilities for fire brick consigned to government jobs. But there are many difficulties encountered in shipping to general users as the railroads are not handling that branch of business very promptly.

Howard F. White, salesmanager of the brick department of the Hocking Valley Products Co., Columbus, Ohio, announces the shipment of a carload of rug-faced brick to Havana, Cuba. The order was the result of a booklet issued by the Columbus Chamber of Commerce in Spanish, describing the various industries of the Buckeye capital.

The fire losses in Cincinnati, Ohio, during the year 1917 were larger than in the preceding year, according to a report given out by Chief Inspector Steinigweg, of the fire prevention bureau. The figures are given at $1,011,465 for the past year as compared with $652,647.23 for the year 1916.

At a meeting of the officers representing the various building trade organizations in the state of Ohio, held in Cincinnati on March 19, it was suggested that, among other things, the matter of curtailing the building industry be urged against, as it would affect a number of men who could not give their time and services to government work, but who would be affected by any serious tie-up of structural work.

The Claycraft Brick Co., of Columbus, Ohio, announces that it has secured two jobs recently. One is the Mary Rutan Hospital at Bellefontaine, Ohio, which will require upwards of 50,000 bricks, and the other the interior brick for the school building at Baltimore-Basil, Ohio. Salesmanager Matthews reports a fairly good demand for gray and brown brick, when general building conditions are taken into consideration.

The face brick business in the Buckeye state is still very quiet, due to lack of demand coupled with inadequate transportation facilities. While some railroads are doing slightly better in the way of providing cars, still there is a slow movement on railroads after the cars are started. As a result of this state of affairs the output among the face brick factories in Ohio is only about ten per cent. of the normal amount.

There was a meeting in Cincinnati, Ohio, at the Hotel Gibson, on March 20, for the purpose of making possible a wider use of the Ohio river. It was held under the auspices of the Ohio River Improvement Association, and a

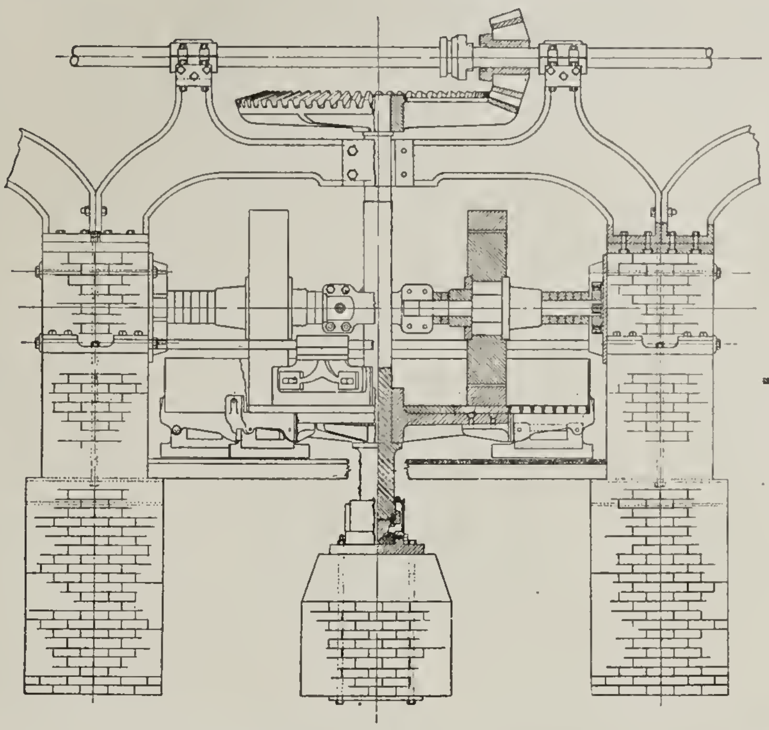
The "Means" Nine Foot Pan

Improved step and toe, and adjustable bearings.

The skill and judgment accumulated by many years of successful manufacturing show up in these pans to great advantage.

Before you buy, ask us for proof of what our machines are doing in the great Ohio valley.

Toronto Foundry & Machine Co., Inc.
Toronto, Ohio



What Do You Know About Silos?

We recognize the fact that you know a great deal more than we do about the making of silo blocks. This is a specialty, and we are sure you are making a high quality ware.

But—the satisfaction the farmer gets from a silo depends also on the doors, roofs, chutes and the re-enforcing. That's where we come in, because we are specialists in silo hardware accessories.

We will be glad to cooperate with you in this matter of mutual importance to us.

The Pierce Company
1106 Waldheim Bldg., Kansas City, Mo.

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

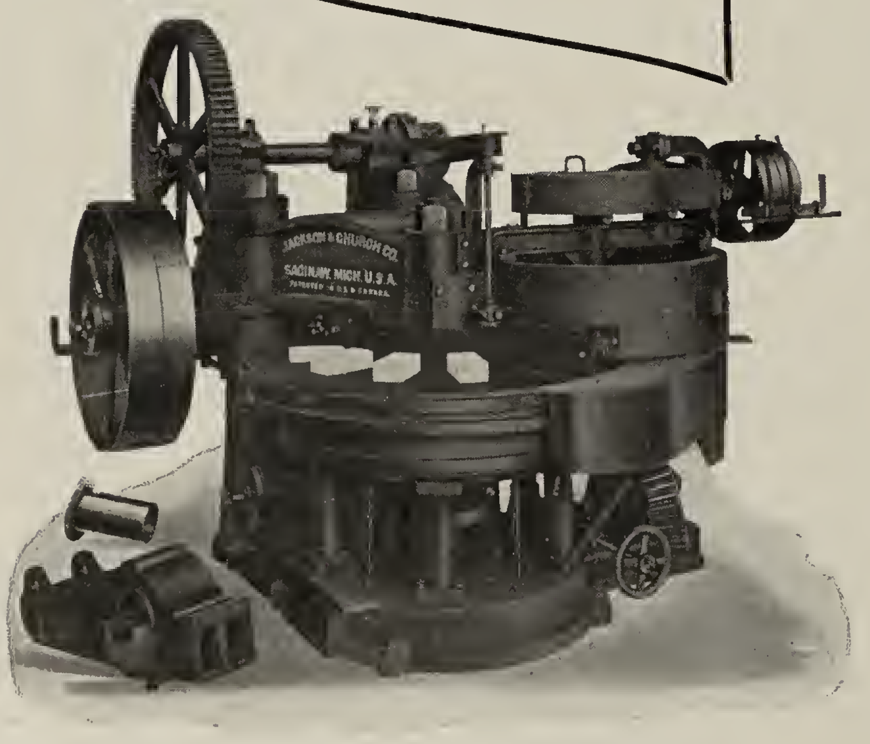
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

number of representatives from different cities were present. It was stated that if the cities along the river will build terminals the government will do its part in making possible a wider use of the river, and thereby increase its shipping possibilities.

While there has been an improvement in the weather in Ohio, the building situation in Cincinnati has not been very much benefited, and the demands are still somewhat slow; that is for brick. The exception to this rule, however, might be noted in a larger demand for common brick. There is only a limited amount of common brick to be had, and those who are in need of commons are scouring the country for supplies. Some of the other clay lines are in good demand, but the difficulty of making shipments has been a serious handicap.

Hugh Radenour, an investment broker, was elected president of the Hallwood Brick & Tile Co., of Columbus, Ohio, at the annual meeting of the company's stockholders held recently. Henry S. Hallwood has been elected vice-president and F. E. Shafmaster, secretary and treasurer. These officers with John W. Wilson and C. W. Tanner, constitute the board of directors. The output of the factory which is located on Seventeenth avenue is sold by the Ironclay Brick Co., of Columbus. Reports for the year showed a very prosperous condition. The company manufactures common brick and drain tile and has a most modern plant equipped with continuous kilns.

The Ohio Highway Commission at Columbus, will open bids March 29 for fifteen paving jobs in various parts of the state. In most cases the specifications provide for the use of brick. Ashland county will have a 4.08 mile stretch paved with monolithic brick, estimated to cost $92,319.77; Ashtabula county a stretch of 5 miles; and one mile in Columbiana county. Other sections to be paved with brick are located in Lake county, 7.715 miles; Lake county, 5.43 miles; and Miami county, 1.15 miles. The latter contract was not advertised legally and steps have been taken to have the bids opened by the county commissioners at Troy, April 5.

Ten miles of Cleveland, Ohio, streets will be paved this summer, because contracts have already been let, says H. C. Baldwin, city paving engineer, and the ruling of the federal government that public work go slow will not affect this important construction. The city of Cleveland now is waiting on sanction of the bond issue by the Public Issues Committee of the Federal Reserve Board, so that Superior Avenue, one of the most important thorofares, can be paved. This will be a $400,000 job. County commissioners of Cuyahoga county, Ohio, are endeavoring to put thru equally important work outside the city limits, and are awaiting action of the board.

Traffic managers representing the Chambers of Commerce in Cleveland, Cincinnati, Toledo, Dayton, Akron, Youngstown and Columbus, Ohio, met in Columbus recently for the purpose of fostering the nation-wide movement to organize "Return Load Bureaus" in the more important distributing centers of the country, which will act as clearinghouses for merchants and manufacturers. Trucking agencies will be instructed on delivery of a load at any point in an endeavor to obtain a return load. The aim is to bring the shipper and hauler together. The Columbus meeting was called by M. J. Caples, chairman of the transportation committee of the Ohio branch, Council of National Defense.

Steps have been taken by Governor Cox and other Ohio state officials for the immediate improvement of several gaps in the National Highway from Columbus eastward to the state line. The road is in excellent condition with the exception of gaps in Muskingum and Guernsey counties. The contracts for the work have been awarded but the state will cancel the contracts and use convict labor in paving the two stretches with brick, made at the state brick plant at Junction City. The work is to be rushed in order to provide a good road for approximately 40,000 army trucks which will be transported from western factories to the Atlantic coast. It is estimated that the work will require 5,000,000 pavers. These will be unloaded by the B. & O. R. R. at four easily accessible points along the road.

Pennsylvania

The Blue Ridge Enameled Brick Co., of Kunkletown, Monroe county, Pa., has been leased by Hoyt and Ward, of New York City. Both these gentlemen are stockholders in the New Jersey Zinc Co., at Palmerton, Pa., and it is presumed that they are back of a project to rehabilitate the old company at Kunkletown and put it on an operating basis. The plant will employ about 100 men.

A new company has been organized and has purchased the plant, holdings, name and business of the Sharon (Pa.) Clay Products Co. The new company, which is capitalized at $100,000, will continue the business under the same name, and will manufacture face and common brick, paving block and fire clay articles. A. W. Krouse is president of the company; George L. Collard, vice-president; H. B. McDowell, secretary-treasurer, and J. P. Callahan, of Detroit, manager.

Manufacturers and brick dealers in Philadelphia, Pa., and vicinity are watching with particular interest the progress of the gigantic housing project designed to provide living accommodations for the workers at the Hog Island, Pa., shipbuilding plant, and it is said that the first group of structures will provide for about four thousand people. This operation will require in the neighborhood of 60,000,000 brick, 15,000,000 face and 45,000,000 common, the total being approximately the entire output of any one of the leading brick manufacturing plants of the country.

Embargoes on freight on the Baltimore & Ohio Railroad which were to be routed via the Toledo division and the Southwest system have been lifted. Lifting of the blockade means that freight will be received on these branches as accepted before the recent storms caused a ban to be placed on them. Traffic conditions are said to be better than at any time since last August, according to officials of the Pennsylvania Lines West, but they are by no means in a normal condition. The situation on the Pittsburgh and Lake Erie Railroad is said to be good.

South Carolina

The Columbia (S. C.) Clay Co. is planning for the reconstruction of its plant recently destroyed by fire, with loss estimated at $100,000.

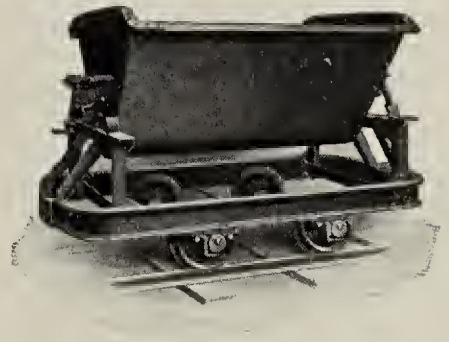
Tennessee

The Georgia Refractories Co., Chattanooga, Tenn., has been incorporated with a capital of $25,000, to engage in the manufacture of brick. J. J. Coffey, Robert L. Coffey and M. J. McEvay are the incorporators.

The Memphis (Tenn.) Builders' Exchange is formulating reorganization plans, George C. Kaucher being chairman of the committee in charge. The exchange expects

Every
WATT KAR
Is a good kar

We specialize on just the one output—we make nothing else—but every kar we make is the best we *can* make.



Sturdy, dependable kars of every size and type but of only one quality and that is

BEST

We are satisfied only if you are satisfied and WATT KARS are always GOOD.

THE WATT MINING CAR WHEEL CO.
BARNESVILLE, OHIO
U. S. A.

Increase Your Kiln Turnover by Using "Mexico" Standard Brick and Shapes

Your efficiency, your capacity, your profits—all depend on your kiln turn over. Tie up a kiln or so and you tie up your whole plant. Your entire machinery becomes a liability the very minute it stops operation. Time lost in repairing and rebuilding kilns is time gone forever — time which cost you money rather than time which made you money.

You can reduce this loss to a minimum and greatly increase your turn over by using the **right** Fire Brick. The usefulness of hundreds of kilns has been greatly increased by the use of

A. P. Green
Fire Brick

"They Last Longer"

In fact, in many sections "Mexico" STANDARDS have become the universal kiln brick. It's only natural though, for STANDARDS are highly refractory and so mixed as to readily resist the constant abrasion from clinkers. They are good for long, continued service.

Write for Catalog and Quotations.
All Shapes are Carried IN STOCK.

A. P. Green Fire Brick Co.
Plants and General Offices
Mexico, Missouri
District Offices: Chicago, Tulsa, St. Louis

to move into new and larger quarters in the News Scimitar building on April 1.

Fire statistics in the Tennessee cities were made public in March by Ed M. Gillenwaters, state fire prevention commisioner. For the twelve months of 1917, Memphis led the list with 565 conflagrations; Nashville was second with 354; Chattanooga third with 282, and Knoxville had 193; this in the order of population. The largest number of fires occurred in February, tho at Nashville, August losses were greatest. The total for the four cities was 1394.

Brick manufacturers and material dealers at Memphis, Tenn., report a good strong March market. Considerable inquiry has been received for common and fancy brick and the forecast is for a better building situation this spring and summer than last year. The same is also true at Nashville. Terra cotta, brick and other clay products' prices remain firm at recent levels. Aside from bungalow residence construction, school buildings, apartment houses and hospital work in sight, automobile buildings, garages and display rooms are developing a good deal of interest in Memphis and other southern cities.

Texas

The Brown Brick Co., Dallas, Tex., has filed an amendment to its charter, increasing its capital stock from $5,000 to $11,000.

Virginia

The valuable brick clays near Richmond, Va., are especially noted in Bulletin No. 483, published by the United States geological survey, department of the interior, under the title "Economic Geology of Richmond, Va., and Vicinity." The loamy clays in this region are well adapted to use in making building brick and as they occur in extensive deposits, they form the basis of a large industry, Henrico county being the leading one of Virginia in the manufacture of common brick. According to this report, in 1917 over 43,000,000 brick valued at $304,000 were made in this county, a considerable increase over the output for 1916. Bulletin No. 483 will be sent free on application to the director of the United States Geological Survey, Washington, D. C.

West Virginia

The Kenilworth Tile Co., Newell, W. Va., has had plans prepared for the reconstruction of its plant recently destroyed by fire with loss estimated at $35,000. The new plant will be a one, two and three-story structure, about 140x310 feet, located at Third and Harrison streets, and is estimated to cost $60,000.

The Bluefield (W. Va.) Brick & Tile Co. has loaded its first two cars of brick, which are now ready for shipment. This is the first shipment made by the company since it was taken over by G. M. Barger. About fifteen men are now employed at the plant and the company is getting things in shape to make daily shipments.

Wyoming

At a special meeting of the Commercial Club of Lovell, Wyo., held recently, Charles Galusha, proprietor of the Lovell brick yard, appeared before the club and asked the co-operation and financial support of this community in the matter of raising an additional $10,000 for the purpose of installing a complete tile equipment in his plant at Lovell. He stated that the amount of tile that is to be used in the Basin country alone for the next few years in drainage work, will make a very nice business for the yard in itself, and that he has not sufficient capital to go ahead and equip the plant as it should be for this kind of business.

Canada

C. S. Parker, of the Car-Box Co., London, Ont., is considering the installation of a tile manufacturing outfit.

The Ontario Provincial Brick & Tile plant at Mimico, Ont., suffered a heavy loss by fire on March 4. The fire broke out in the west end of the plant and spread rapidly among the frame buildings. The main building was saved from destruction, but the loss will be heavy.

The Cadwell Brick Co., Windsor, Ont., with a capital of $100,000, has been incorporated to manufacture and sell brick and tile. The provisional directors are: C. W. Cadwell, of Windsor; R. K. Russell and W. B. Russell, of Toronto; W. C. Chambers, of Harriston.

The Don Valley Brick Co., and the Sun Brick Co., located in the Don Valley, Toronto, have had the unique experience of being flooded out. The Don rose until the electric light poles along the banks were covered and the Canadian Northern Railway roundhouse was submerged. Great damage was done, but the waters have returned to their natural level and William Burgess and Angus German are smiling again to see their plants in full operation once more, none the worse for the experience save some unavoidable delays in delivery.

* * *

Canadian Clay Statistics

From the Preliminary Report on the Mineral Production of Canada, issued by the Canada Department of Mines, we obtain the following figures, showing the value of clay products for the years 1916 and 1917:

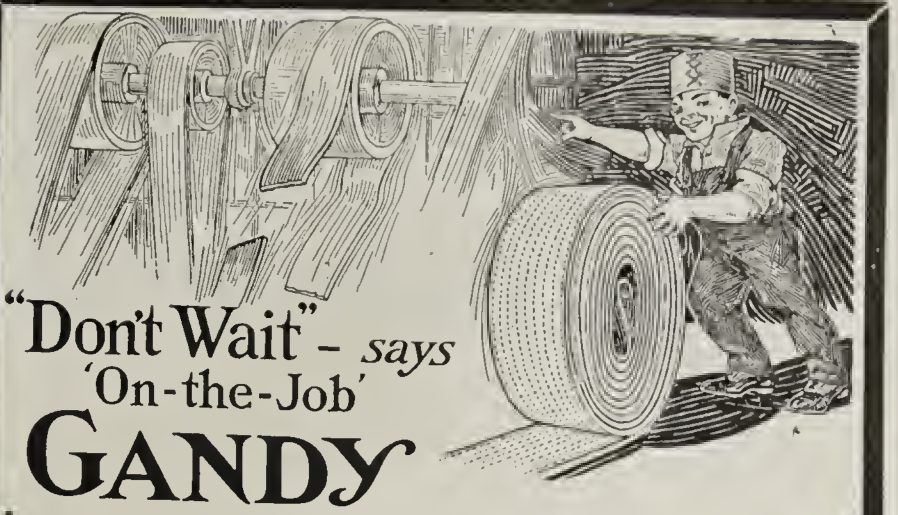
Product	Valuation	
	1916	1917
Brick, common	$1,826,844	$2,017,046
Brick, pressed, paving	543,601	589,406
Kaolin	17,500	9,594
Pottery	61,069	122,878
Refractories, fireclay, firebrick, etc.	234,562	210,838
Sewer pipe	716,287	778,159
Tile	359,387	434,465
Fireproofing, hollow block, etc	361,555	441,369

* * *

Ontario's Clay Products

The following figures give the valuation of clay products produced in Ontario, Canada, during 1917 as compared to 1916:

Product	Valuation	
	1916	1917
Brick, fancy and pressed	$318,942	$462,357
Brick, common	509.559	769.340
Drain tile	275,471	468,886
Tile, hollow blocks	176,953	301,528
Pottery	87,025	94,501
Sewer pipe	216,749	205,810



"Don't Wait" - says 'On-the-Job' GANDY

Never trouble trouble 'til trouble troubles you is good advice to follow—sometimes—but not in wartimes.

If you want to help your country "over there", don't run the risk of serious tie-ups "over here".

Anticipate your production needs—get in your orders for GANDY, the original stitched cotton duck Power, Thresher, and Conveyor belts —AT ONCE.

You can bank on us to fill your orders promptly, but remember every carrier is loaded to capacity, and government supplies have right of way.

Call on our Engineering Department to solve your transmission problems. We stand ready to give you "up-to-the-minute" service.

Order from your mill supply house or from us direct.

Always look for the well known GANDY trade mark and the painted green edge.

Samples and price list on request.

The Gandy Belting Company

732 West Pratt Street

Baltimore, Md.

New York Branch: 36 Warren St.

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

for measuring or regulating temperatures are as necessary to heat treatment as a safety valve is to a boiler.

The continuous reliable records of temperature obtained by their use can be had in no other way and their ready adaptability to any desirable combination enables them to repay their cost many times over, generally in less than six months of use. Any disturbance due to inattention or inexperience of the furnace attendant or to entrance of excess air or to disarrangement of some part of the furnace, is immediately detected by a pyrometer and the warning given in time to avoid loss.

Pyrometer records assist in reasoning out undue fluctuation in quality of finished product, and make possible the standardization of heat treatment in repetitive operations. Once the desirable relation of the time and heat factors has been determined for a given process, the pyrometer makes perfect duplication of the ideal process easy. It tells at any instant from start to finish whether the heat is above or below normal and to what extent. This elimination of guesswork not only enables the attendant to correct the error intelligently but is the keynote to minimized fuel consumption, to 100 per cent. perfect production, and to completion of process in the shortest possible time.

Maintenance of ideal heat conditions, as possible only with the aid of pyrometers, invariably reduces the quantity of material rejected as seconds or scrap and in some instances completely eliminates this loss. By so doing, the quantity and value of the output is increased, and the fact that each batch can be turned out in the shortest time permits of a further capacity increase. A 10 per cent. fuel saving is not uncommon, and we have records where Thwing Pyrometers have reduced fuel consumption by one-third.

Tell us your needs and we will advise you to your best interests.

Thwing Instrument Co.
3336 Lancaster Ave., Philadelphia, Pa.

POTTERY NOTES

A Resume of the Activities of the Potters and Some Mention of Their Plans for the Future

Empire State Potters Patriotic

New York state's pottery industry is facing the greatest crisis that has ever confronted it, because of the nation-wide coal shortage and the government priority orders recently announced regarding the distribution of coal to essential and non-essential industries.

Many factories thruout the state have been face to face with a complete shutdown from lack of coal dozens of times during the past few months. Some of them have been forced to suspend temporarily but the great majority have managed to keep going on a day-to-day supply. Scores of times when a shutdown appeared inevitable when the workers went home in the evening, a scant supply would be on hand in the morning and the plant would be able to continue.

Now with non-essential industries getting the "leavings" of the coal supply, the pottery men see little hope for improvement. Some of them are working on war contracts, in a limited way. Those who are not must continue the battle for fuel.

"Necessity is the mother of invention," the old motto says, and it has again been verified by resourceful pottery manufacturers. One plant found itself one day without a bit of coal. The manager on his way to work that day had noticed a huge pile of coal dust standing on a trestle. He secured a small amount, experimented and found he could use it in his business. He bought the whole pile, 800 tons in all, and for a few weeks solved the fuel problem for his factory. Previous to this, coal dust had practically been considered waste. Now there is a demand for it.

This predicament comes to the pottery manufacturers at a time when it is safe to say they have more orders on their books than ever before in their history. With the imports from England, France and Germany entirely cut off, there has been an unprecedented demand from new customers who have been in the habit of buying abroad, but now are forced to buy at home. In addition, there is an abnormal demand from home customers. Thousands of dollars of unfilled orders are on the books of many concerns and in some instances orders aggregating as high as $50,000 have been turned down simply because the plants were not able to produce. Some have enlarged their factories fifty to one hundred per cent. but still are unable to keep up, and now with their fuel supply cut off, they face the problem of having their additions and enlargements stand useless unless they can in some way secure coal.

But despite all these handicaps, despite the fact that they probably will lose thousands of dollars, the pottery men have not one word of complaint to offer. They realize that the war must be won at all costs. Everyone must make sacrifices. They realize that the successful conduct of the war demands that the industries manufacturing war materials must be supplied with coal first of all and to the detriment of all others. They are willing and glad to see the munition plants working night and day with full coal bins while they have none, but, without a word of criticism or complaint against the government, they hope they can be supplied as soon as possible.

The pottery manufacturers have received notice that all the nation's industries have been divided into four classes (1) Industries and production necessary for human life; (2) Industries manufacturing war supplies and the equipment necessary for the production in the first class; (3) Industries for peace time production and (4) Industries producing luxuries. They believe they will be placed in the fourth class, to take what fuel there is left after all the other absolutely necessary industries have been supplied.

According to the plan as announced here, the distribution of coal into the channels most needed will be in the hands of a clearing committee. All the various industries are to be catalogued into one of the four classes and the fuel distributed according to the greatest necessity. A system of priorities, preferentials and embargoes is to be instituted. The fuel administration will exercise preferential distribution for the first two classes and shut off supplies for the last two,

Pottery manufacturers expect that they will be called upon immediately for a curtailment of their use of fuel, but they point out that the curtailment is at the least possible point now, baring an actual shutdown of their plants.

The first of all manufacturers to come under the order, so the pottery men are informed, are the window glass makers. An order has been issued limiting the use of fuel for the production of common window glass fifty per cent. of the amount manufactured last year. It is estimated that not more than 5,000,000 boxes of glass would be used this year and that continued production at the present rate would result in an over-manufacture of the material which would not be needed for another year.

"Anything to win the war" is the motto of the Empire State pottery manufacturers.

* * *

Arts and Crafts Pottery Exhibition

In the exhibition of pottery at the gallery of the Society of Arts and Crafts in Boston, Mass., there are many specimens of contemporary wares by American potters, and a few examples of old work by way of comparison. This sets up a rather severe test for the moderns. The old pottery, which was loaned by George B. Dexter and Frank Gair Macomber, consists of Chinese and Rhodian vases and plates. The new work comes largely from the best known American makers, including that of Mrs. A. A. Robineau, of Syracuse, N. Y., the Newcomb Pottery of New Orleans, La., the Pewabic Pottery of Detroit, Mich., the Dedham Pottery, Marblehead Pottery, Fulper Pottery, of Flemington, N. J., the Hampshire Pottery, and the Van Briggle Pottery of Colorado Springs, Colo.

The collection is very artistically arranged, and the display of color in the various glazes is quite magnificent. A feature of interest is the exhibit of lustre tiles from the Pewabic Pottery; and another special feature is the display of plates in the Persian style of decoration made by Miss Potter, under the direction of George C. Greener, of the North Bennet Street School.

* * *

Embargo to be Placed on English Clays

Altho there is no lack of orders with domestic pottery manufacturers, the latter are having no end of trouble

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

Look At This Letter

From the NATIONAL BRICK COMPANY to the JONES UNDER-FEED STOKER COMPANY. It states:

"In 1912 at Plant "C," and 1913 at Plant "A," we scrapped the other makes of stokers and installed Jones Under-Feed Stokers. In 1916, we acquired the hand-fired plant of the Allis Brick Company at Deerfield, Illinois, calling it Plant "D." One year's operation was enough to convince us, and in 1917 we equipped it with six Jones Stokers. We have now in use twenty-four Jones Stokers.

"We call upon our power plants to give us one hundred per cent power above rating, and with Jones Stokers we expect it."

This should be evidence enough to convince you that you should install Jones Under-Feed Stokers in the furnaces in your plant.

Write Us Today

The Under-Feed Stoker Co. of America

General Offices:
Harris Trust Building, Chicago, Illinois

Branch Offices in the Following Cities:

New York, Pittsburgh, Philadelphia, Boston, Buffalo, Cincinnati, Toronto, Minneapolis, Kansas City, Denver, Detroit, Toledo, Salt Lake City, Charlotte, New Orleans

and inconvenience in making shipments and in obtaining raw materials. Unusual delay in securing deliveries of raw products, such as clays, flint and sand is proving a serious situation. On top of these difficulties comes the official word from Washington that consideration is now being given the proposition of placing an embargo upon the importation of English clays. Should this latter proposition be put into effect, those manufacturers who make use of imported materials will be compelled to make further use of all American materials. There are a few domestic pottery manufacturing concerns who make permanent announcement that nothing but American materials are used, but others continue to make use of the English clays to a greater or less extent.

* * *

Embargoes a Serious Handicap to Potters

The embargo situation this year has proved the most serious in the history of the trade, so far as the shipping of finished product is concerned. Upon several occasions this year the East Liverpool, Ohio, pottery district has been closed tight against the forwarding of any packages of pottery, except in less than car lots, on that particular local division of the Pennsylvania railroad. This prohibited the forwarding of finished pottery to Cincinnati or St. Louis, or eastward to New York, Philadelphia, Baltimore or Washington. After this tight embargo was lifted, a rush of freight to the railroad stations followed, and then a few days ago another "tight" embargo was announced. This was the result of too much freight being offered. Since early in January the embargoes have been on and off with marked regularity, until today no one can forecast what will be the rule for the morrow.

* * *

Domestic Pottery for Government Purposes

No small amount of domestic pottery is now being made for Government purposes. Plates, cups and saucers, and several other staple items are in heavy demand, some of the business coming from the Government direct, while other business is being placed thru large jobbing offices. Just as much trouble is being encountered in getting this ware thru transportation terminals as there would be to a barrel of ware for a small country dealer, this in the face of the fact that priorty orders are issued for the taking of such freight.

* * *

Labor Shortage Becomes Acute

A shortage of labor exists in many potteries of the country, on account of the Federal draft, and some pottery workers leaving the trade to take work in other lines. Not only is common labor scarce, but skilled labor is becoming more acute. No new labor is being procured in the potteries to take the place of those who have been called to the colors.

* * *

Among the Potteries Here and There

Samuel Wiley, aged forty, manager of the kiln firing department of the D. E. McNicol Pottery Co., at Clarksburg, W. Va., died at Clarksburg recently. His body was taken to Chester, W. Va., across the Ohio River from East Liverpool, Ohio, for burial.

Thomas B. Anderson, one of the most noted pottery managers in the domestic trade, has assumed the management of the Pope-Gosser China Co.'s pottery at Coshocton, Ohio. Recently he was identified with his father in the manufacturing of door knobs at East Liverpool, but prior to that was general factory manager for the Edwin M. Knowles China Co., at Chester and Newell, W. Va., and of the Smith-Phillips China Co., at East Liverpool, Ohio. He is a close student of ceramics, and is noted for the making of particular bodies.

The Potmakers' Credit Association is advertising in the florists' papers in an effort to call attention to the new credit regulations adopted by the flower pot manufacturers, which have arranged for a sixty-day net form of credit, with five per cent. for cash within fifteen days. It is announced that the ruling is effective at once and will be strictly enforced.

The Novelty Clay Forming Co., who have been operating at Newell, W. Va., for several years, have taken a lease on the idle plant of the former Ohio China Co.'s, pottery plant at East Palestine, Ohio, and will remove there at once. The firm is making electric porcelain specialties.

The management of the Chicago (Ill.) Pottery Co., which has been making sanitary ware, will divert its product into vitreous hotel china. Molds are now being made. The plant has a capacity of four kilns.

An additional decorating kiln is being built at the plant of the Thompson Pottery Co., at East Liverpool, Ohio. It is one of the largest in that district.

* * *

Pottery Making a Real Art at High School.

There are more ways than one of teaching a boy and the new Franklin Junior High School at Minneapolis, Minn., seems to have hit on a method which is meeting with much enthusiasm and success.

Clay modeling is no new thing in the public schools, but at the Franklin High, under the direction of a capable teacher, they are building up a department of pottery work which is an innovation. It is an "art" course, so given as to become actual industrial training, on a par with the more conventional high school courses in wood-working and metal-working. The course is not for art dabblers but is for workmen who are going to know about pottery making from the formation of the liquid clay slip to the glazing and firing of the finished jar or vase.

The students learn to mix the dry clay with water, churn and knead it to the proper consistency, and shape it on the potter's wheel or cast it in plaster molds. They learn how clays are applied and how the huge kiln burns their pots and mats and plaques into beautiful soft greens and rose tints and biscuit browns.

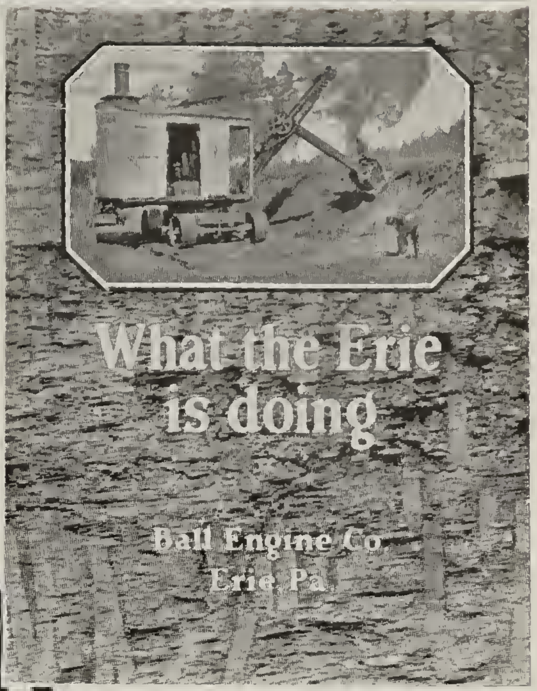
The Franklin pupils are also studying the whys and hows of the whole clayworking process. They will make an investigation of the various sorts of clays, where they come from and what their peculiarities are and in this way will get a thoro knowledge of the art of clayworking.

The huge kiln in use at the Franklin school is the only pottery kiln in the Twin Cities and was "inherited," with other equipment, from the Handicraft Guild, when work there in pottery was dicontinued.

Pottery articles made in other Minneapolis schools will be fired at cost in the Franklin kiln. Commercial firing of pottery objects produced in the Twin Cities will be carried on and it is hoped that the department will in time become self-sustaining.

Erie Revolving Shovels

The cover of this bulletin, in colors, shows stiff blue shale excavated by an Erie Shovel without blasting at the Dunn Brick Company's plant near Erie. The actual size of this Bulletin is 8½x11 inches.



It tells you what a steam shovel can do

In this bulletin you will find valuable facts about excavation by steam shovel—which is the most economical means of getting out your clay or shale.

This bulletin contains practical information on shovel work. It gives actual records of yardages obtained, and actual records of upkeep costs.

We will be glad to send you a copy of this bulletin, without the slightest obligation on your part. Mail the coupon, and a copy will be sent promptly.

BALL ENGINE COMPANY, ERIE, PA.

Gentlemen: I have read the advertisement in Brick and Clay Record. Please send me a copy of the new Bulletin on Steam Shovel Work: "What the Erie Is Doing." (No obligation on my part.)

Name..............................

Address..............................

....

SAY I SAW IT IN BRICK AND CLAY RECORD

Refractories and Potteries find

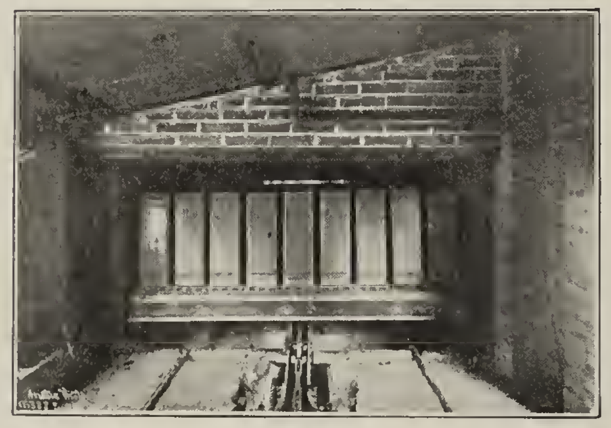
"Proctor" DRYERS

particularly valuable— because the ware to be dried is more valuable than ever before.

The green ware must not be checked, broken or cracked. It must be dried bone dry, in a hurry, without loss and at a small expense—which is what is accomplished in

"Proctor" DRYERS

The Philadelphia Textile Machinery Co.
Sixth Street & Tabor Road
Philadelphia
Pa.



Ohio Plans State-Wide Truck Delivery

Whatever the present plans for road building in Ohio and thruout the country, hampered as they are by war time conditions, the roads of the future must be wider, says county commissioner James Kelly, of the Cuyahoga county, Ohio, commissioners.

Because many of the roads in that county are only 14 or 16 feet wide, they interfere with the proper handling of the trucking transportation of freight, which is growing steadily since the congestion on railroads in Ohio made itself felt. "Importance of automobile trucking in business life of this district must cause a revision of plans for county roads," says Mr. Kelly. "The roads should not only be built not less than 18 feet wide, but constructed so that they will withstand the increased traffic of heavy trucks."

Plans for a state-wide truck freight transportation service in Ohio seem to justify this view, and experts from different cities are expected to meet at Columbus to discuss such an organization. It is believed this will be the forerunner of a national organization of this kind.

Cleveland, Ohio, is the first large city to start a freight truck line. It is serving twenty-three towns along Lake Erie in Ohio. That the state movement is a good one, is pointed out by Maurice B. Greenough, chief engineer of the National Paving Brick Manufacturers' Association, Cleveland, Ohio, who cites the system at work now in Connecticut. The plan was worked out by the Connecticut State Council of Defense, comprising fifteen chambers of commerce. Support of the Ohio movement is being urged upon big business interests.

Example of how the freight truck is developing in popularity and efficiency in northern Ohio, is illustrated by the recent purchase of several more trucks by the Cleveland-Akron Bag Co., which now has a fleet of more than fifty trucks, traveling northern Ohio for a radius of 100 miles. The trucks are used mainly for making deliveries.

* * *

Another Monument to Paving Brick

Paving that will withstand the wear and tear of 5,000 vehicles a day for nearly a decade is, in the opinion of paving experts, some roadway. With the agitation on in Cleveland, Ohio, for improvement of the many deplorable highways of that city, paving brick interests point with pride to the monument to this form of paving construction at University Circle, laid in 1911. At that time, according to Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, a political campaign was on, and one faction, in order to invite support, erected an immense placard at this point, which read: "This macadam pavement, unable to stand the wear and tear of heavy traffic, is to be replaced by a first-class brick pavement," and the promise was fulfilled. Faith in the promise has made good, because since that time there has been an ever-increasing number of vehicles using this particular piece of pavement, and with the advancement of time and the increased demands from commerce, automobile trucks, with their own weight of many tons, and cargoes, have subjected this pavement to unusual test.

Secretary Blair points out also that since 1911 the traffic passing over this roadway has caused no perceptible wear. A significant feature is that in spite of the splendid service this pavement is giving, it was not laid upon a prepared foundation, as would be the case in more recent years. The brick was placed upon the old macadam base.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

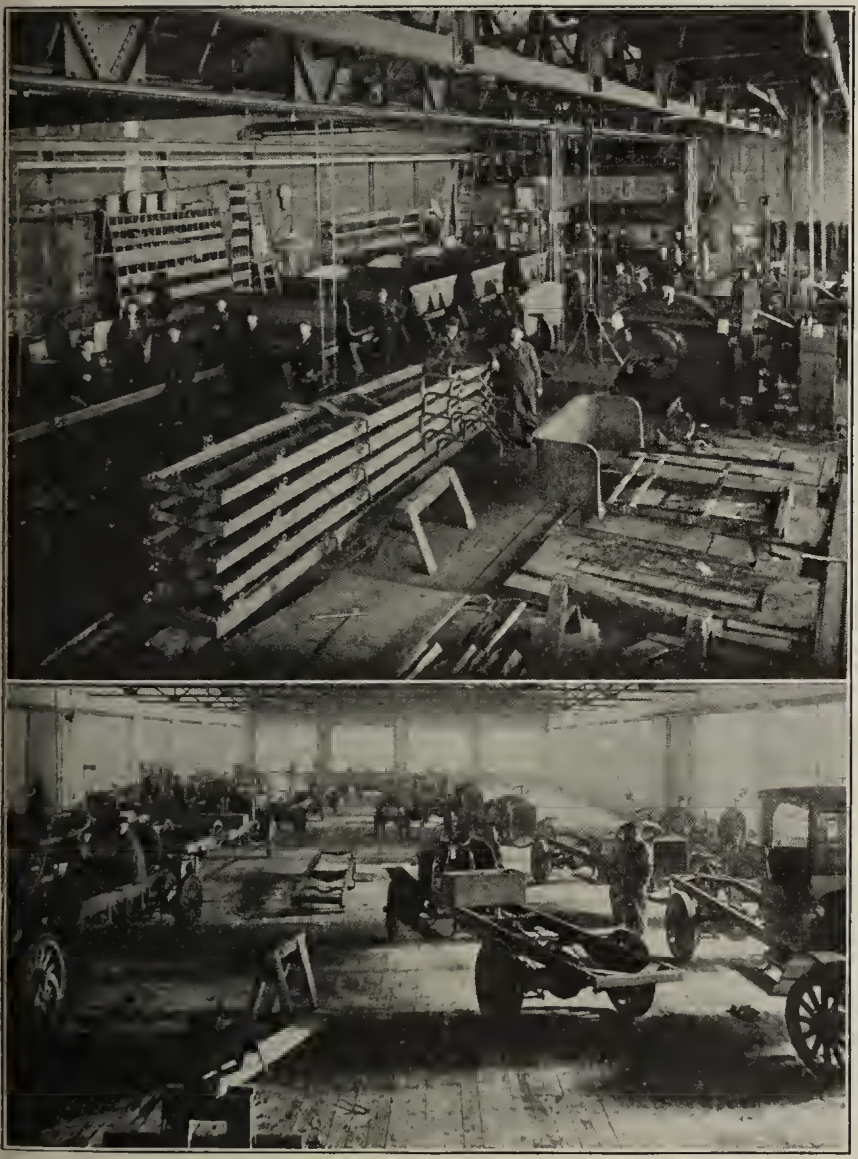
The Acme a Truck of Proved Units

Over in Cadillac, Mich., there is a remarkable truck being manufactured by the Cadillac Auto Truck Company. It is called the truck of proved units, and to deserve this name it has incorporated in its makeup units, each one of which is the recognized leader in its particular field.

In reading over the names of the all-American units that compose the Acme, your own judgment and knowledge of appliances is sufficient to corroborate the truth and justice of the claim that the Acme is a truck of proved units. No motor truck offers a better lineup of units than the following:

- Continental Motor
- Pierce Governor
- Rayfield Carburetor
- Timken Axles
- Bearings
- Ross Steering Gear
- Long Radiator
- Eisemann Magneto
- Timken-David
- Cotta Transmission
- Detroit Springs
- Smith Frame
- Brown Worm Drive

These supreme units have been combined by Acme engineers into a chassis of perfect balance and liberal safety factors that is unsurpassed for economy and efficiency of operation.



Interior Views of the Acme Factory

100° in the SHADE—AND UP!

Belts operating
CUPOLA FANS
INDUCED DRAFT BLOWERS

BELTS IN THE
ENGINE ROOM
BOILER ROOM

You can't expect them to last unless they are protected.

Heat injures a belt.

It makes it porous, like a dry sponge.

The belt slips, polished, and cannot pull the load.

Yet unless the right kind of belt treatment is used, it will get greasy, slippery.

The lace holes will cut out.

The belt becomes rotten.

You can avoid this trouble and obtain constant active service from these belts by treating them with

CLING-SURFACE BELT PRESERVATIVE.

It keeps them pliable without making them soft.

It prevents slipping without being sticky.

It unites itself firmly with the fibres, lubricating and preserving them, and prevents dry rot, cracking and decay.

Your belts will last longer, work harder, and give you no trouble.

Send for our interesting booklet on fan belts, or let us ship you a can for sixty days' trial. This obligates US to make good with YOU.

Remember, use CLING-SURFACE and you won't need belt dressings.

Cling-Surface the life preserver for belts TRADE MARK

CLING-SURFACE COMPANY
1029 Niagara Street
Buffalo New York U S A

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, **Book Department,**

Brick and Clay Record
610 Federal Street, Chicago, Ill.

The Acme (Formerly Known as Cadillac) Motor Truck Factory

A point that is interesting to the prospective buyer of trucks and one which will inevitably increase the good will of the Acme truck is that the company organization is well composed of Cadillac, Michigan, capital. This surely is a promise implied. The truck will be built for permanency and it is further a guarantee of excellency.

Users in every section of the country, and in every line of business report an average of 12 to 15 miles per gallon of gas for the 1-ton and 10 to 12 for the 2-ton. Repair costs are equally low. Up to 8,000 and 10,000 miles an expense of but 1/8 to 1/5 mill per mile is commonplace, and above that distance the upkeep is correspondingly small.

For the manufacturer of brick and the dealer in clay products, no matter what the requirements of his business, there is an Acme built to take care of his hauling requirements. The Acme 1-tonner admirably fits the one-horse dray or delivery wagon load; the Acme 2-tonner the team load; and the Acme 3½ and 4-tonners the heavy hauls. In their large modern factory, they have unusual facilities for the manufacture of all styles of bodies. Especially are they well equipped to build All Steel Dump Bodies for the 2, 3½ and 4-ton models. Attention in particular is called to the Acme Combination Stake and Dump Body, the ideal body equipment for brick manufacturers, and dealers in clay products, and users having a varied hauling problem. Description of this body you will find attached hereto.

The value of Acme standardization on high grade construction is reflected in the following amazing record. The company recently made a survey of Acme trucks in service and picking 100 owners at random, found that their trucks collectively had traveled more than a million miles without a single call for factory service. They claim this record has been possible because the Acme is driven by the best engine, because the Acme bears the best axles, the best bearings, the best springs, worm drive, clutch, and because it is built by men who own their homes in Cadillac. They want to see Acme built for long term and satisfactory service.

* * *

The Portable Conveyor Displaces Men

When the plant starts up this year and you find that each department is short its full quota of men, you may (if you own one) be delighted at the work that will be accomplished by the B-G Portable Belt Conveyor or Elevator.

Out at What Cheer, Iowa, the conveyor is used to carry raw clay to the main underground conveyor in the clay storage shed, and in such work it is eliminating wheelers with wheelbarrows, and extra shovelers required to toss the clay from the sides of the storage to the belt conveying to the crushers.

On still other plants, the B-G is used to store or to handle coal and clay and in each single instance the saving in men is emphasized.

Right now it will be wise to make your preparations for handling your "storage coal." If we are to be compelled to store a reserve of fuel, then it should be accomplished with a minimum of expense, and the B-G handles the coal from car to pile and then reclaims it, all without the use of labor in transferring the coal.

Further information may be obtained by writing to Barber-Greene Company, 515 West Park Avenue, in Aurora, Ill.

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BRICK and CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Liberty Bonds Are Ammunition for Uncle Sam's 4,000-mile Gun.

In Next Issue

¶ You plant owners and superintendents who burn oil or gas, cannot fail to be interested in Carl B. Harrop's splendid article treating on the principles and design of oil and gas burners. This is one of the first articles, and the most authoritative, ever published on this subject.

¶ An article telling how a pyrometer can be used to save fuel will appear in the April 23 issue. It is written by a man connected with one of the largest face brick companies in the East, who attacks this subject from an entirely different angle than any of the preceding articles ever published on pyrometers.

¶ "Why a Community Should Build Brick Highways," by Maurice B. Greenough, gives valuable information, while G. W. Greenwood's article entitled "A Paving Brick Contract is Resurrected," will furnish interesting and profitable reading for all paving brick men.

You cannot afford to miss an issue. Never before, in the history of the clay products industry, have conditions been changing so rapidly as now. Witness the last issue of BRICK AND CLAY RECORD telling—of what the hollow tile industry is doing in regard to obtaining and disposing of government orders—of the proposed new common brick organization—of the government's contemplated ruling concerning the fuel supply of the clay products industry, etc. New events like these are occurring daily and to be properly informed on the progress in the industry you MUST read BRICK AND CLAY RECORD. (It comes every other Tuesday.) You cannot afford to miss an issue.

The EDITOR'S CORNER

Secretary McAdoo's Recent Statement Concerning Building

A RECENT DEVELOPMENT of much interest to the manufacturer of clay products is contained in the announcement of a letter written to Samuel Gompers by Secretary of the Treasury McAdoo, under date of March 15. This letter reads in part as follows:

I have your letter of February 18 enclosing copy of a resolution adopted by the Building Trades Council of San Francisco in which it is stated that I have been reported in the public press as having "appealed to property owners not to construct any homes or buildings during the war." This is entirely erroneous. I have said that building operations which are not required to protect the health or provide for the comfortable needs of our people, or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war, should be postponed.

As you know I have no authority to direct that building operations be curtailed. I have merely suggested that unnecessary building of that kind be postponed until the end of the war. Such postponement would, I am sure, help win the war, but every patriotic man must be determined by his own conscience in the matter and must decide for himself if he can postpone the erection of a contemplated building until the war is over. Compliance with this suggestion may cause some inconveniences which are to be greatly deplored, but such inconveniences are an unavoidable incident to war. The situation must be viewed from a national and not from a local standpoint.

It seems as though Secretary McAdoo's former statement in the press with regard to building was badly misquoted, and therefore, misunderstood. The above communication is certainly most welcome in that it clears up to a certain extent some of the false light in which the Secretary has been made to appear. The above statement, however, is not as lucid as it might be. It is negative rather than positive. It tells prospective builders what they cannot do rather than what they can do. It leaves a great deal to individual construction.

In his letter of March 15 to Samuel Gompers, Secretary McAdoo also writes: "The successful financing of the war depends upon the difference between what is *made* and what is *spent.*" Since saving is the point that is emphasized in this letter, it can be reasonably assumed that the Secretary takes it for granted that the money must be made before it can be saved. With this thought in mind it would seem that the individual builder might be perfectly justified in proceeding with his plans, provided same did not interfere with war priorities, especially if such building were "required to protect the health or provide for the comfortable needs of our people."

It is hard to believe that the government has singled out the building industry to carry more than its share of the war burden. It has carefully refrained from defining essential and non-essential business to date, and that it should attempt to set down what is essential and non-essential building, would, it seems, hardly be fair. This would further lead one to believe that a broad construction should be placed on Secretary McAdoo's recent statement regarding building.

Another reason for necessary building proceeding is contained in the labor situation. Due to declining activity of construction operations, large quantities of highly specialized labor have been released, and for the most part, are now unemployed. This is surely a great waste and since Secretary McAdoo himself says, "There must be no waste," any reasonable steps taken to employ this type of labor, would, it seems, be in the national interest.

Secretary McAdoo's modified statement is indicative of a more favorable attitude toward building than has heretofore existed.

* * *

We Would Like to Know—

HOW YOU ARE SOLVING the problem of handling alien employes and reducing excessive labor turnover.

One of the biggest problems of industry at the present time is that of the alien employe and the excessive labor turnover resulting from unsettled war conditions. Would it not be helpful to every large clay products manufacturer to learn how other men in the same field have tried to solve this problem?

Will you not kindly send us a brief outline of your method of handling these matters? If a number of clay products manufacturers would do this, the result would be a large volume of responses, giving practical plans and tested methods well worth publishing for the benefit of all concerned.

This request is part of a campaign being conducted by the National Americanization Committee which is trying to find a practical solution by practical men of the problem of the alien, friendly, neutral, and unfriendly. Let us as clay products men do our "bit" toward making this campaign a success by submitting the data which has been requested.

TRANSPORTATION ENTERS

Fortnight's Developments at Nation's Capital Indicate Transportation
Manufacturing Industry—P. B. Noyes, Chief of Conservation, U. S. Fuel
operate With Other Governmental Departments, Looking Toward the

SPECIAL

Washington, D. C., April 3.—Realizing that the industries involved are very much interested as to what action is to be taken by the Fuel Administration in regard to their several lines, we wish to advise you as follows:

It is probable that there will be some delay in issuing the various orders that have been contemplated to cover the building trades industry. It has been our effort to thoroly coordinate any action taken with the various Departments of the Government involved, and we find that the War Industries Board wishes to consider a slightly different plan, which would control more thoroly the necessary output of building materials and at the same time assure the production of a sufficient output to care for necessities.—P. B. Noyes, U. S. Fuel Administration.

By Waldon Fawcett.

NO PERSON in Washington, even among the higher officials of the United States Fuel Administration, would have predicted a month ago that the official orders "rationing" the brick and clay products industry would be delayed as they have been. The postponements in the issuance of the coal allowance announcement brought their own reward, however, for certain much harassed officials. Even the most conservative of these executives at the Fuel Administration had predicted that the orders would be ready the last week in March, and when the month closed with no pronouncements, they were obliged to face a telephonic and telegraphic bombardment asking the reason why.

DELAY INDICATES FAVORABLE DEVELOPMENTS

In the end, however, the delays so irritating to many men in the industry, may have compensations for brick and clay products interests generally. I am informed that the main reason for the tardiness in the issuance of the fuel orders was found in the desire of the executives at the Fuel Administration to secure the sanction of all the other various branches of the Government for the tentative scheme of production curtailment ere that was heralded as an accomplished fact. This all-around endorsement, if it really signifies what appears on the face, will mean more to the industry than might at first be suspected.

Without concert of action and concurrence of opinion on the part of the various branches of the Government, it might well happen that brick and clay products manufacturers, after receiving the permission of the Fuel Administration to operate at a given percentage of capacity, would find themselves "nagged" or hauled this way and that by other branches of the Government not in harmony, possibly, with the ideas of the Fuel Administration and not even conversant, maybe, with what the Fuel Administration had done in the premises. To avoid such working at cross-purposes was the object of certain eleventh-hour moves on the part of Administrator Garfield's aids that helped to hold up the fuel orders. However, there is reason to believe that as a result of interchanges the last week in March, there is now a mutual understanding on this issue between the Fuel Administration, the United States Railroad Administration, the War Industries Board, the War Trade Board and various other war-managing institutions that should operate to spare "rationed" clay products manufacturers from undue interference after they once get on a war basis with respect to fuel.

TRANSPORTATION INCREASINGLY IMPORTANT

Reference to the Railroad Administration as a factor in the situation brings us up sharply before the fact that transportation conditions are, in the case of various branches of the industry, likely to vie with fuel supply as a hampering or curtailing influence. As luck would have it, too, the acute transportation situation which grows better much more slowly than had been anticipated, is hitting hard the few branches of the trade that have not been made to feel the weight of fuel restrictions.

Take, for example, the situation of the drain tile manufacturers. Telegrams pouring into Washington in a steady stream would indicate that the situation as regards the movement of adequate drain tile for this season's requirements on American farms are well nigh desperate. So impressed are officials with the predicament of the drain tile men that the United States Department of Agriculture which is deeply concerned to speed up agricultural production, has, as a means to that end, taken unto itself responsibility for quickening the transit of drain tile.

DRAIN TILE RECEIVING SPECIAL ATTENTION

The drain tile problem has been placed in the hands of G. C. White, transportation specialist of the United States Department of Agriculture, and he is working directly with Edward Chambers, Director of the Division of Traffic of the United States Railroad Administration, in an effort to unravel the tangle. However, Mr. White feels that he has something of a grievance against the drain tile manufacturers because of the character of the information which they are supplying to him as a basis for his crusade to bring about better transportation conditions. He declares that the average manufacturer has been accustomed to devote about nine-tenths of the text in the average telegram or other communication addressed to the Bureau of Markets to a preachment on the importance of drain tile for the cause of agriculture and only about one-tenth of the space is given over to "brass tacks" in-

as IMPORTANT PROBLEM

May Vie With Fuel Rationing as a Problem in the Clay Products
Administration, Advises Orders Further Delayed Account Desire to Co-
Assurance of a Sufficient Output of Clay Products to Care for Necessities

formation as to the transportation situation at the manufacturer's own plant.

The Department of Agriculture, declares Mr. White, fully realizes the vital need for drain tile, but it does not know, without wasting time looking thru files, railroad guides, etc., on just what railroads each drain tile factory is located, whether a manufacturer has a spur or siding at his plant, etc., etc. What the Department wants, then, from the drain tile manufacturer, is specific information as to quantities of pipe awaiting shipment, loading facilities, the number of cars which each manufacturer can load in a day, etc.

CLAY PRODUCTS NOT EXCEPTED IN EMBARGO

There having been no mention of brick or any clay products in the list of "exceptions" to embargoes authorized a month and a half ago by the Car Service Section of the Division of Transportation of the Railroad Administration, especially energetic action will be necessary if such products are to be taken care of under the revised regulations covering railroad traffic that are now in process of formulation. I am informed that even in the case of refractory brick, transportation difficulties are being encountered and E. R. Sturtevant, Secretary of the Hollow Building Tile Association, who has established headquarters in Washington, has had to divert his attention from the apportionment of some big Government contracts to answer the appeals of various manufacturers in his branch of the industry who have been alarmed by wild rumors of impending commercial embargoes more drastic than anything yet attempted.

Pending the clearing up of the fuel rationing situation, however, not many manufacturers in any branch of the industry have been petitioning at Washington for relief from transportation difficulties.

* * *

Win-the-War Spirit in Business Letters

"See that a win-the-war spirit gets into your business letters," is the slogan of a movement launched by the Department of Commerce to remind business men that the everyday business letter is a most effective instrument for creating confidence in the Government's war policies and for inspiring others with the determination to see the war thru at any cost.

"The idea was first brought forward in connection with American business letters to foreign countries," said Secretary Redfield on March 28. "The volume of our foreign business mail is very large. It reaches firms in all but the enemy countries. For the most part it is read by those who are for us, but you may be sure that it reaches many who doubt our success and many who are at heart against us. I am sure that every foreign business man who opens an American letter is quick to detect even the slightest indication of the writer's feelings on the conduct of the war and its outcome.

"It is of the utmost importance therefore that the American business letter breathe confidence in every line. If the manufacturer or exporter feels that he has a just grievance against restrictions imposed on his trade, by all means let him go right to headquarters and register as emphatic complaint as he feels is justified. But he certainly should not carry the matter into his business letters. It is sure to create an entirely erroneous impression in some minds.

"Let the American business man make known to the whole world that he is for this war and that he is going to see it thru, regardless of inconvenience, loss of trade, loss of money, or anything else. Every manufacturer ought to be fearless in expressing his sentiments even tho he may be writing to a concern whose sympathies he may suspect are not wholly with us. Don't give a foreign concern the idea that you are apologizing for your Government's restrictions or that you are chafing under them. Spread the impression, the absolutely correct impression, that over here we are backing this war unqualifiedly."

* * *

How Many Liberty Bonds Have You?

At midnight, April 5, the third Liberty loan drive in the seventh federal reserve district opened with the loan organization in every state and county ready to roll up an over-subscription that will place the maximum far above the total subscribed during the second loan.

The opening of the third drive also marked the first anniversary of our entrance into the war. This nation has already floated two great loans and it now realizes how stupendous is the undertaking in which we are engaged. How much are YOU willing to lend the boys "over there" who are giving their all?

General Pershing, in a telegram received at Washington, on April 7, said: "Every dollar subscribed to the Liberty loan is a dollar invested in American manhood. Every dollar subscribed as the result of self-denial means partnership in the hardships and risks of our men in the trenches. Every dollar subscribed will confirm the determination of our people at home to stand by its army to a victorious end. An overwhelming subscription to the third Liberty loan will be a patriotic expression of confidence in our ability as a nation to maintain all that we hold dear in civilization."

You can have your share in America's answer to German savagery by investing every cent you can lay your hands on, thru hard work and self sacrifice, in United States bonds, and in so doing, will help Uncle Sam as well as yourself, for don't overlook the fact that these bonds bear interest at the rate of 4¼ per cent.

Let us, as in industry, put our shoulders to the wheel and go "over the top" for Uncle Sam in the third Liberty loan drive.

* * *

New Jersey Meeting Postponed

"Meeting of New Jersey Association postponed until later date," is wire advice under date of April 8 from Geo. H. Brown, director of ceramics, Rutgers College, New

Brunswick, N. J. This is for the information of all who have been contemplating attending the meeting of the New Jersey Clay Workers' Association, previously announced to be held on April 12. Further advice will no doubt be forthcoming when a definite date for this meeting has been determined.

* * *

A New Volume To Add to Your Library

"Finding and Stopping Waste in Modern Boiler Rooms," is the title of a new publication which is of particular value to power plant owners, managers, engineers and fireman.

The book is divided into five sections, covering the subjects of fuels, combustion, heat absorption, boiler efficiency and boiler testing, as well as boiler plant proportioning and management.

This valuable handbook has been compiled by engineers of the Harrison Safety Boiler Works and is on sale thru *Brick and Clay Record's* book department at $1.00 per copy, postpaid.

There are 278 pages and 213 illustrations in this book and the first three sections are of particular interest to men engaged in the clay products industry as they cover in a clear and comprehensive manner subjects which are vitally important to the manufacturing end of the industry.

* * *

Oregon Clayworkers Meet in Portland

The Oregon Clayworkers' Association held its fourth annual meeting at Portland, March 7 and 8. The meeting was well attended and the program was carried out in all its details. Mayor George L. Baker, of Portland, made the opening address and emphasized the fact that clayworking industries while always local, added much to Oregon payrolls. J. G. Hammer, president of the Standard Brick & Tile Co., of Portland, was elected president for the ensuing year; W. C. Corbett, of the Corvallis Brick & Tile Co., of Corvallis, was re-elected vice-president, and Samuel Geijsbeek, of Portland, was re-elected secretary and treasurer. W. E. Wilson, of the Salem Tile & Mercantile Co., was elected a director for two years.

Among the more important matters before the association was the discontinuance of making three-inch drain tile. It was pointed out by Professor Powers, of the drainage college, that three-inch tile was too small to be of much use. The association went on record to discourage the use of such tile, but could not see its way clear to stop the manufacturing of three-inch tile entirely.

The next annual meeting of the association will be held in Corvallis in January, in connection with farmers' week at the Oregon Agricultural College. This was decided upon after an urgent invitation from President Kerr, of the college. Professor W. L. Powers, of the drainage college, was made an honorary member of the association.

Several very interesting papers were presented before the meeting. Professor Ira Williams gave a short description of the research work being done in the clay products industry, and also of the soda deposits of the state. Frank C. Moore of the Denny-Renton Clay & Coal Co. gave a blackboard demonstration of cost systems in connection with clay plants, and brought out many points of interest. S. G. Ward told of the general use of hollow building tile, and pointed out that hollow tile is replacing wood and concrete in many places. Professor W. L. Powers, secretary of the Oregon Drainage Association, showed with maps and figures the progress of drainage in the state, and the many new projects contemplated.

Secretary Samuel Geijsbeek gave a blackboard demonstration on cost, selling and discounts, and this brought out many points of general interest to the members. That general cost systems should be kept by all manufacturers was plainly pointed out, and selling and discounts are in direct connection with the cost of manufacturing.

The banquet which was tendered by the Portland members was well attended.

* * *

No Gloom Around This Plant

Muskogee Vitrified Brick Co., Muskogee, Okla., advises that it had a very fine business last year, having manufactured twenty-five million face and common brick, and at that, the plant was not able to half supply the demand.

"We have not been troubled very much with the car shortage," writes N. Hermes, superintendent. "The market is still holding up fine and prospects are very bright for the coming year."

Owing to weather conditions, the plant was closed down for several weeks during the past winter in order to give it a thoro overhauling, from the steam shovel to the loading tracks. A new cutting table with a capacity of one hundred and fifty thousand brick per day was installed. The company has planned to have its plant in the very best condition and expects to push production to the limit during the coming season.

"As the demand was pushing our production, we did not have a very large supply of brick on hand when we shut down," continues Mr. Hermes, "consequently we are entirely out of brick now. We have orders on our books for over five million brick and could have as many more if we were in a position to promise shipment within the next sixty or ninety days."

* * *

Do You Have a Highly Refractory Clay?

An Eastern writer is desirous of getting in touch with concerns handling highly refractory clays which may be used as a base for the manufacture of high temperature cement.

If you have such a clay, the editor would be glad to hear from you and it may be possible that he can put you in touch with someone with whom you can negotiate for the sale of same.

* * *

Son of Prominent Machinery Man Now Major

Stanley W. Root, son of A. R. Root of Chambers Brothers Co., Philadelphia, Pa., has been promoted to the rank of major and has been assigned to a course of training in the firing school at Fort Sill, Okla. Major Root was attached to the headquarters staff of the 157th Field Artillery Brigade at Camp Gordon at the time of his promotion.

* * *

Drain Tile Manufacturer Shows Patriotism

Post Brothers Tile Co., of Commerce, Mo., have set an example in patriotic and effective advertising, which is worthy of emulation. This live concern is sending out in all its mail, blotters and envelope "stuffers" bearing the messages: "A Bushel of Wheat or Corn Will Buy More Drain Tile NOW than ever before. Get busy—Help Win the War," and "Help Win the War—Tile-Drain those Wet and Idle Acres and Make Them Work for Uncle Sam and for You."

REDUCING *the* RISK *in* STORING COAL

The Following Has Been Prepared from Articles Which Have Appeared in the "Black Diamond," Written by W. D. Langtry, of the Commercial Testing & Engineering Company, and S. W. Parr and C. M. Young, of the University of Illinois, all Authorities on Coal Topics, as Well as from Numerous Bulletins and Circulars Issued by the Government and the University of Illinois

THE STORAGE OF COAL is becoming increasingly necessary during the present international complications. The prime reason for storing coal, is of course, to prevent such reöccurrences as happened during the past winter when poor weather, railroad congestion, increased requirements, and other causes brought the fuel situation into a very chaotic condition. Persons connected with the Fuel Administration predict another such fuel shortage for next winter and to defeat it or at least relieve it, urge the storage of coal during the present months.

Since but very few clay plants have heretofore endeavored to store any of their coal, and consequently have had but little or no experience in this line, *Brick and Clay Record* has prepared this article, weaving together the important points of articles, circulars and government bulletins relating to this subject.

Broadly speaking, the larger sizes of coal, from about No. 3 nut on up thru the various sizes of nut, egg and lump, store without giving much trouble. This is due principally to the fact that these sizes are drier and offer a smaller surface, in proportion to their mass, to the action of oxygen, than the finer sizes do.

METHODS OF STORING

In general, there are three methods used for storing coal; one, under water; two, in closed piles, and three, in open piles. By storing under water any kind and size of coal may be kept for any length of time without danger of loss due to fire. This method is used by very large consumers like the Western Electric Co. of Chicago, and the United States Navy Department. This provides a supply of coal which may be safely held for an indefinite period of time. All such concerns also hold coal in open piles for immediate use. Someone has suggested that some clay plants might be able to store part of their fuel in ponds which have been created by excavating their clay deposits.

Storing in closed bins is generally limited to small quantities of fuel. The great bulk of the storage coal at present is kept in open piles. This is intended to be held readily available for immediate use and is seldom on the ground for more than a few months. As a matter of fact, it should not be kept for any great length of time, but the length of time should depend upon the kind of coal with regard to its storage properties, since storing in open piles is the most dangerous form. However, when proper precautions are taken at the time the coal is placed in storage and maintained while the pile lasts, losses may be eliminated or at any rate reduced to a minimum. Before stating what precautions to take and how to store coal with the least danger due to spontaneous combustion, we will take up some of the causes for this phenomenon.

OXIDATION

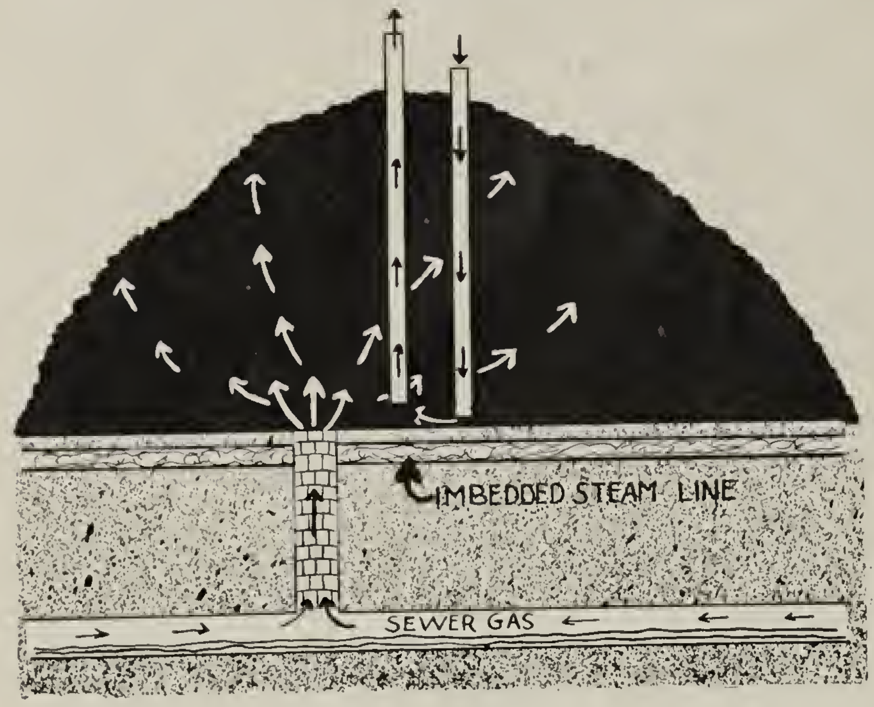
The losses which occur from storing coal may be considered as being due to oxidation. In this connection the general fact should be borne in mind that the rate of oxidation increases with increase of temperature. Also, we should remember that coal is a very poor conductor of heat, so that any heat occurring or generating in the interior of the coal pile stays there. These two facts indicate that when oxidation once begins, even tho at a low temperature, it generates a small amount of heat; this heat is insulated from the outside air, and, being retained, tends to increase the rate of oxidation. Thus one action aids the other and the oxidation increases at a definite rate, those compounds easiest to oxidize being attacked first.

One of the ingredients of coal which oxidizes readily is iron pyrite, sometimes called "fool's gold" because it resembles gold in appearance. Opinions differ greatly as to just what extent pyrite plays in the spontaneous ignition of coal. However, it has been the experience of many concerns that a coal, high in sulphur, both of an iron or pyrite nature and when it appears in a flaky nature scattered all thru the coal, is susceptible to the action of oxygen and the flaky sulphur thus will have a tendency to help it slack or break up the larger lumps. Iron pyrite is oxidized in the presence of water to ferrous sulphate and sulphuric acid according to the equation: Iron Pyrite plus Oxygen plus Water equals Iron Sulphate plus Sulphuric Acid plus Heat.

It must be remembered that the water actually enters into chemical combination with the pyrite and oxygen, unless the water is present in sufficient amount to exclude the air. This is the condition which prevails in under-water storage and is one of the reasons why that method is best. On the other hand, oxidation of coal in the dry state proceeds very slowly, since the only moisture available is that in the coal and in the air. In dry coal the constituents of the reaction is lacking to a relatively large degree.

As far as the amount of volatile matter in the coal is concerned, this seems to have but very little effect on the storage properties of the fuel. There is no doubt, however, but that the low volatile fuel does have more advantage over the high volatile coal in storage.

The effect of external sources of heat is of extreme importance in connection with piles of coal in storage. Without the aid of heat from some external source the initial stages of oxidation either would not occur or their rate would be extremely slow. These sources may be the hot rays of the sun, steam pipes in the ground or near the pile, waste heat ducts, or the heat from boilers.



Showing How Storage Pile Located Over a Manhole, Steam Line, or Waste Heat Duct may Become Ignited, Owing to the Effect of the Gases or Heat Upon It.

LIMIT PILE TO TWELVE FOOT HEIGHT

In storing coal in an open pile the height has a great deal of influence on the spontaneous combustion. This is especially true when there is a large percentage of fines in the coal. It is best practice to limit the height of a coal pile, because of two reasons. A pile too high crushes the lower layers of coal, producing more fines which makes the pile more difficult to maintain. Second, the larger the pile the less heat-dissipating surface there is exposed in proportion to the heat generating capacity of the pile. Best practice has shown that twelve feet should be the limit of the height of coal storing in open piles.

It should be kept in mind that the finer particles expose numerous surfaces to the action of oxygen and a large quantity of these, when placed in a deep pile, providing the air can get to them, makes the danger of spontaneous combustion greater, for the reason that enough air cannot go thru the pile to keep it cool. Lump coal, such as is used for domestic purposes, say about two inches and larger, can be stored successfully providing this coal is put down in such a manner that it will not materially break up and finer particles accumulate in the pile. We understand that the Commonwealth Edison Co., Chicago, have successfully stored coal, that is, one and one-half inches and larger. In other words, they have eliminated the fine coal by buying only that kind or size that has passed from a one and one-half inch screen.

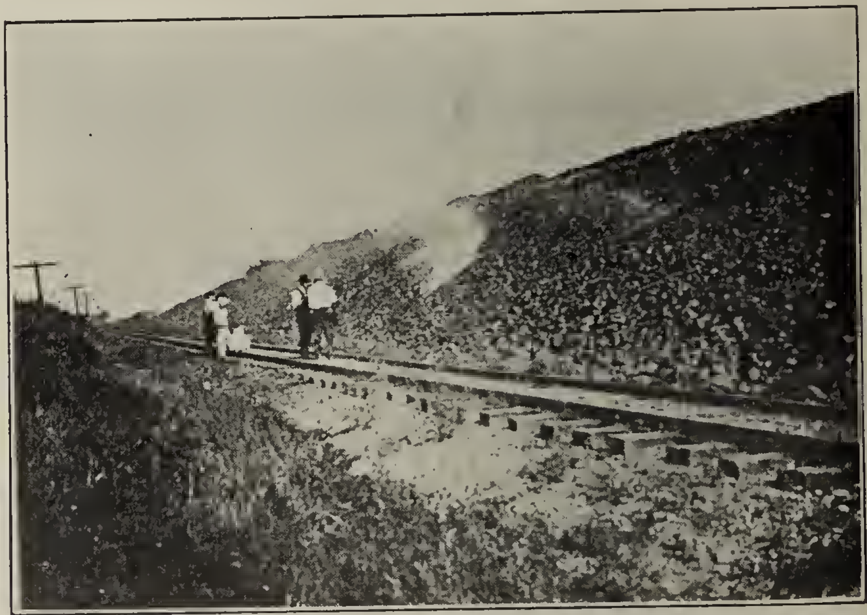
KEEP PILE COOL OR AIR-TIGHT

The secret of storing coal in open piles successfully is to keep it in such shape that air can get to it in sufficient quantity to keep it cool, or else pack the coal so hard that it is practically air tight. By keeping the piles open, the air is permitted to travel thru the pile and cool it off so that not sufficient heat is generated by which combustion can spontaneously take place. It has been said that some piles have been aerated by using drain tile or perforated boiler tubes. The great danger in using this means is that not enough of these devices will be installed, with the consequence that only enough air is admitted to assist in the oxidation of the coal, rather than to cool it off. If the tile for instance, is not too high, say seven or eight feet, some system of tile or pipes might be used with success providing enough were placed in service. There is no such rule as to tell just how many should be used since this will depend upon local conditions, and the kind and size of coal to be stored.

When storing coal at the University of Illinois, where Illinois coal was used, an attempt had been made to use so much fine coal and to pack it so thoroly as to prevent any circulation of air, also reducing the original air in the pile so as to prevent heating. This method has been fairly successful, but in some cases the piles have heated. An investigation made when a pile was open for the removal of portions which had begun to heat indicated that heating had occurred only in those parts of the pile which contained comparatively small proportions of fine coal. It appeared upon examination that in the portions of the pile in which fine sizes were present, the largest proportion did not contain sufficient oxygen to heat the coal to any noticeable extent. The close packing had also obstructed circulation so that little oxygen could have been brought in even if the temperature had been raised to such an extent as to favor circulation of air. This indicates that one comparatively safe method of storing coal is to use enough of the fine sizes to occupy the space as completely as possible, and to pack the coal tightly in order that the air space may be reduced and the circulation of air restricted. The most dangerous conditions exist when the coal is of such size as to prevent a large aggregate surface for absorption, and at the same time leaves sufficient air space to provide the oxygen required for heating; this condition is found in a loosely packed pile of mixed sizes.

STORE COAL WHEN COOL AND DRY

The effect of moistening the coal, generally speaking, is to court danger. As little water as is possible should be put on the coal when it goes into storage. Water is one of the ingredients that assists materially in spontaneous combustion. It is best to have the coal placed in storage when it is as near dry as possible and on a cool day. Where it is permissible, it is well to have a cover of some kind for the coal, thus protecting it from the hot sun, snow or rain.



This Supply of Storage Coal was Piled too High, Causing It to Fire in Several Places, as Can be Noted on the View.

Altho it is undoubtedly true that some coals can be stored with greater safety than others, the danger from spontaneous combustion is due more to improperly prepared and piled coal than it is to the kind of coal stored. Most varieties of bituminous coal can be stored in the air if of the proper size and if free from fine coal and dust. The coal should be handled so that dust and fine coal are not produced in storing. The danger of spontaneous combustion in storing coal is very greatly reduced, if not entirely eliminated, by storing only lump coal from which the dust and fines have been removed. Of two coals the least friable should be chosen for storage purposes, because less dust and fine coal will be produced in its handling.

STORE SLACK UNDER WATER

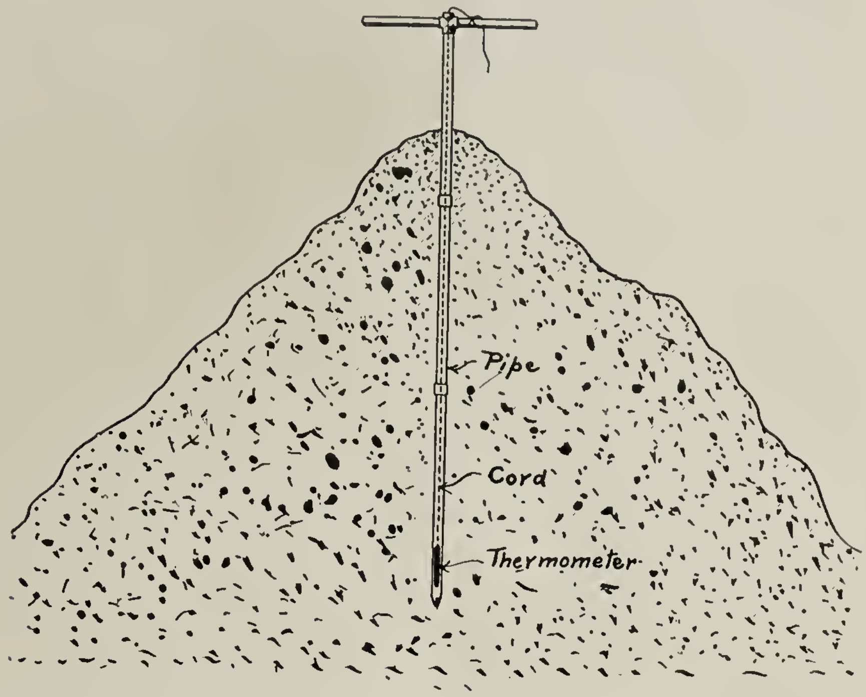
Fine coal or slack has been successfully stored, first by keeping air currents from the pile by means of a closely sealed wall built around the pile; second, by closely packing the fine coal. Piles of slack must be very closely watched for heating and means provided for promptly moving the pile if heating develops. The only absolutely safe way to store slack or fine coal is under water. Many varieties of mine run can not be stored safely because of fine coal and dust mixed with the lumps. Coal exposed to the air for some time may become seasoned and thus may be less liable to spontaneous combustion, due to the oxidation of the surfaces of the lumps, but opinions differ widely on this point.

It is believed by many that damp coal stored on a damp base is peculiarly liable to spontaneous combustion, but the evidence on this point is by no means conclusive. It is safer not to dampen coal when or after it is placed in storage.

STORAGE PROPERTIES OF VARIOUS FUELS

A prominent fuel engineer makes the following general statements in regard to the storage properties of various fuels: "My experience with some of the Pittsburgh coals such as Youghiogheny, for instance, has been that the Youghiogheny coal fired in many cases on the docks thruout the northwest. This coal had been piled rather high and not much attention was given to the method in which it was piled. This coal might store equally as well as others if carried in a shallow pile and carefully watched by taking readings of the interior temperature. Some of the coals will store good if proper care is taken in placing them on the ground. Hocking Valley coal for instance, has given about the same kind of trouble on the docks as the Youghiogheny. There are several different kinds of coal in West Virginia such as Pochahontas and New River, both of which store well. Some of the other bituminous coal will also store in good shape, providing care is taken in the manner in which they are piled. Kentucky has several different kinds of coal, the greatest distinction being between the eastern and western fields. Talking in a general way, the western Kentucky coal will not store nearly as well as the coal from the eastern field. I have known from personal experience, coal from the eastern field to have been in storage for seven or eight years with very little or no deterioration. The pile was all screenings and was about seven or eight feet deep. My belief is that the majority of the eastern Kentucky coals will store in fair shape. The number four coal from Indiana is generally a fair storing coal. However, it will give trouble providing it is not stored properly and with care. It, however, does not have the same tendency to air slack to the degree that some of the number five coals will. Coals from the number three, five and six mines, generally speaking, must have a great deal of care and attention in order to stock successfully. As for Illinois coals, the coal coming from Franklin County has a very fair reputation for being a good stocking coal. Williamson County coal also will store fairly well but coals coming from the southern part of the state and around St. Louis should have a great degree of care taken when placed in storage. Iowa and Missouri coals, in general, must be placed in storage with a great deal of caution and care."

Taking Temperature Readings at Regular Short Time and Space Intervals is Absolutely Essential to the Safe Regulation of the Coal Supply Pile.



This Illustrates a Method of Determining the Temperature Within a Storage Supply by Means of a Gas Pipe, a Cord, and Thermometer.

RECORD TEMPERATURE RISE

Whatever precautions are taken in choice and handling of coal, provision should be made for keeping track of the temperature rise in a coal pile and for rapid re-handling of portions of a pile in case of excessive heating. In a coal pile covering a considerable area, it should be so divided that in case of spontaneous combustion of a portion, the heat will not be transmitted to the whole pile which normally would have remained cool.

The care that should be given storage piles after the coal has once been placed in the pile should amount to periodical readings of the interior temperature at the start or about once or twice every week or ten days, these readings being taken in locations near enough together, possibly from ten or twelve feet, depending upon the size of the pile. If there is a tendency for the interior temperature to rise steadily and it reaches a temperature say 250 degrees Fahr. it is then time to begin to remove the pile or devise some means of pulling the burning coal off. This temperature reading may be taken by inserting a gas pipe, the diameter of which is large enough to take a breaking thread thermometer conveniently. These pipes may be so constructed as to open at the end and wooden blocks made so that the pipe may be forced into the pile without the pipe filling with coal. After it has reached the desired location the pipe may then be pulled up a trifle, thus leaving the wooden block and the end of the pipe open for the temperature reading. The pipe may be closed and pointed at one end and thus driven into the pile, but when this is the case this pipe should be left in its position ten to fifteen minutes so that it may become thoroly saturated with any heat that may be generated, inside the coal.

MAKE PROVISION FOR RAPID REHANDLING

The object of rehandling the coal is to allow it to cool below a dangerous temperature. Any method of rehandling which does not allow of cooling will only transfer the difficulty from the old piles to the new. It is usually useless to employ water in an attempt to cool a coal pile. Lack of provision for rapid loading, cooling and repiling of coal is the cause of serious loss from spontaneous combustion.

Conclusions based upon the behavior of coal in steam generation after six years of storage, as set forth in bulletin 78 of the University of Illinois Engineering Experiment Station are as follows:

1. The problem of burning weathered coal is largely one of correct handling and ignition. Under these circumstances it gives as good results as fresh screenings.
2. Weathered coal required a little thinner fire and more draft than fresh screenings.
3. When using weathered coal the fuel bed should not approach any nearer to the water-back than from four to six inches, otherwise trouble with clinker is experienced.
4. Practically as high capacity was obtained with weathered coal as with the other coals used, and if anything, the fuel bed required less attention.

FOR SUCCESSFUL COAL STORAGE

In conclusion, we suggest to those clay plant owners who see the advantages in storing their coal now, the following precautions which must be taken in storing coal successfully:

1. Avoid external sources of heat which may in any way contribute toward increasing the temperature of the mass of coal.
2. Eliminate coal dust and fine coal as far as possible.
3. Store dry coal and keep it dry.
4. Do not pile the coal too high. Shallow piles afford the best opportunity for the escape of heat from the interior.
5. Store as large a size coal as possible.
6. Store under water, if possible, and be sure the coal is completely submerged.
7. Watch the interior temperature of the pile with a thermometer and as soon as any abnormal rise in temperature occurs, mark that spot as the next one to be drawn on for fuel, or if the condition seems serious, overhaul the pile at that point and flood it.

* * *

UNITED STATES *to* SPEND MILLIONS *for* HIGHWAY IMPROVEMENT *in* 1918

COMBINED FORCES of the government, states and counties will spend for highway improvement in 1918 the amazing total of $263,096,610. This is the announcement contained in the first detailed survey of the nation's road building plan issued by officials of the touring bureau of the B. F. Goodrich Rubber Company, who have been in contact daily for two months with highway commissioners of the states.

While this sum seems staggering, eclipsing by eighty-two per cent. the expenditures of any previous year and in money figures that of 1917 by $118,797,750, road officials of the government and states said it represented merely a "drop in the bucket" of what should be spent before the war was concluded. They admit the railroad situation has made imperative lavish road appropriations—the total of this year is little better than half what Secretary McAdoo has announced as necessary for the upbuilding of the over-taxed American railroad system. Calculations by government officials are that with good highways, motor trucks and motor vehicles are capable of carrying approximately 200 per cent. more freight than the railroads. In these same calculations they estimate the value of our highways at $6,240,000,000.

Data in hand discloses that the productive possibilities of communities were considered above all else in determining the sums to be allotted for road improvement. Thus we notice that the south and middle west appropriations exceed those of other regions by many millions. Texas, for instance, leads all others with contemplated highway development, announcing the amazing assignment of $25,000,000 for road improvement. Last year it spent $5,000,000.

APPROPRIATIONS BY STATES

Here are the amounts to be spent this year by states, compared with those of last year:

	1917	1918
Alabama	$ 150,000	$ 2,500,000
Arizona	750,000	3,000,000
Arkansas	4,000,000	12,299,000
California	3,210,000	12,000,000
Colorado	3,100,000	3,635,000
Connecticut	2,500,000	2,500,000
Delaware	320,000	1,000,000
Florida	2,000,000	2,750,000
Georgia	3,500,000	4,300,000
Idaho	800,000	800,000
Illinois	5,500,000	17,000,000
Indiana	6,000,000	17,380,000
Iowa	15,140,000	15,500,000
Kansas	6,500,000	10,500,000
Kentucky	4,500,000	4,500,000
Louisiana	8,000,000	5,300,000
Maine	400,000	1,150,000
Maryland	2,250,000	2,700,000
Massachusetts	4,500,000	3,083,000
Michigan	1,500,000	2,300,000
Minnesota	3,884,925	7,700,000
Mississippi	1,500,000	3,500,000
Missouri	2,500,000	4,000,000
Montana	2,000,000	3,000,000
Nebraska	3,500,000	1,279,757
Nevada	300,000	560,000
New Hampshire	1,038,704	587,000
New Jersey	4,500,000	8,100,000
New Mexico	500,000	1,500,000
New York	7,000,000	10,000,000
North Carolina	1,750,000	2,500,000
North Dakota	1,000,000	3,500,000
Ohio	2,829,858	6,000,000
Oklahoma	3,500,000	6,400,000
Oregon	1,371,226	5,653,516
Pennsylvania	3,250,000	5,750,000

Rhode Island	481,724	600,000
South Carolina	1,173,000	1,498,000
South Dakota	350,000	1,500,000
Tennessee	2,000,000	3,000,000
Texas	5,000,000	25,000,000
Utah	943,129	1,131,754
Vermont	485,000	685,000
Virginia	2,332,577	2,115,000
Washington	3,500,000	8,408,250
West Virginia	8,000,000	14,000,000
Wisconsin	4,588,717	10,125,000
Wyoming	400,000	806,000
Totals	$144,298,860	$263,096,619

Roughly, it is estimated that the expenditure for highway improvement is approximately $2.35 per capita; or, to italicize this, each man, woman and child in the nation would contribute this much for the building and bettering of roads for the movement of supplies were taxation on such a basis. Were the expense apportioned out on an average basis each state would pay $5,400,000.

HEAVY TRAFFIC NECESSITATES REPAIR

Necessity for vast improvement of road conditions is emphasized in reports from the south where unprecedented truck travel is reported. Loads exceeding for size all expectation are reported rumbling over highways, and the state highway commission of Maryland points out that the millions that have been invested must be spent in vain unless states undertake to repair as quickly as they build. "It is a common sight," reports the Maryland commission, "to see loads rumbling over our highways now that would ordinarily wreck a city street. Our whole road fabric must be rent thru if we continue to build and not to repair."

The only fly in the ointment is the labor problem. Several highway commissioners display marked uneasiness over the shortage of labor and freight cars for hauling road building material. They expect government aid.

Road funds include building and improvement of bridges, etc., but it is impossible to get an estimate on how much this phase will eat into the total. A tendency is manifest everywhere tho, to do away with the narrow road and construct only broad, firm bodied roads capable of heavy traffic.

Reports from state highway commissioners disclose some interesting individual features.

In Oregon, for instance, the government and state bodies are spending five times what they did last year in order to build trunk roads into large timber tracts. From these is being taken the woods for the armada of ships Uncle Sam is constructing. In many cases roads have been planked by army engineers to enable the heavy trucks laden with mighty timbers to pass.

A. C. McKibbin of the Missouri state highway board writes that in forwarding to Washington reports on traffic areas in Missouri he gave first consideration to live stock, grain, poultry, mineral and timber producing areas. Into these, he recommended, auxiliary and tributary roads should extend.

Iowa is entitled to the palm for consistent road construction. This state, spent $15,000,000 last year and is doing the same this year. Approximately 6,000 miles of highways in the state are being improved and extended.

Tulsa county, Oklahoma, is spending $1,750,000, which is more than some states spent during the entire twelve months of last year. Another county Okmulgee, is putting $800,000 into forty-three miles of roadway.

BADGER STATE HAS MODEL SYSTEM

Wisconsin is putting into effect a trunk system of roads which taps every community of the state. The plan outlined by the Wisconsin commissioners is one for others to pattern after. Much individual credit is due A. R. Hirst, one of the foremost civil engineers, for the installation of the road system.

Arkansas, which last year spent $4,000,000, is investing $12,000,000 in constructing a series of highways between Louisiana and Arkansas, via Hot Springs and Little Rock.

Illinois and Indiana rank next to Texas in expenditures for road building. Indiana has inherited 175 miles of the new market highway, and is also eager to polish up its share of the Dixie highway.

Texas' huge appropriation is not inflated by any large government tender. Federal authorities have given the Lone Star state just $875,000 and the counties and state have gone out and got the rest.

Ohio, Pennsylvania and Michigan, which play a large part in any highway program, owing to the fact that all government truck caravans traverse their confines, are concentrating on those lanes used most by the big industries. Traffic between the huge rubber and steel cities of Ohio and Pennsylvania and shipping points will be uninterrupted in winter as well as summer. Plows are being purchased to keep open roads during winter months.

No startling increases in appropriations are reported from the East and New England states because highway commissioners there have never within the past decade allowed anything to interfere with a consistent road building program.

* * *

Mack of Connecticut Indorses Truck Delivery

Six months ago Edward Mack & Son, of Windsor, Conn., put a two-ton four-cylinder truck in service. It has worked out very successfully, especially on the long hauls to Hartford and surrounding towns. The accompanying illustration shows the car unloading Mack's Harvard water-struck brick.

There are many brick yards in the vicinity of Hartford and while Mack's is not the largest, yet it is unique in that all brick is of the water-struck sort and entirely made by hand. Four generations of the Macks have carried on the brick business and quality has ever been the big idea in mind.

And in order that deliveries of these brick might be made quicker the truck mentioned was purchased. Up to the present time no special effort has been made to keep an actual account of the cost. Up-keep is moderate and on the four to five round trips to Hartford, a distance of fifty-six miles, over fair roads, five gallons of gasoline are used. Unloading and loading is entirely by hand, the truck being fitted with a broad, flat platform body. The driver looks after the truck, keeping it in good condition, and assists his helper, who always accompanies him, with the loading and unloading.

Motor Truck Delivery for the Brick Manufactured on a Small Plant in Connecticut has been Found to be Very Convenient and Economical.

The PEN *is* MIGHTIER *than the* BRICK BARROW—SOMETIMES

Several Extracts of Tabulated Order and Stock Sheets Are Given in This Installment, Which Show the Value of These Records, Especially to the Sales Department

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company, Uniontown, Pa.

"MR. BARNES," said the G. M., strolling into the latter's office and observing him hacking up a ruler, intently studying some sheets of paper at the same time, on which some tabulations appeared, "I have decided to institute a contest between you and that boy of mine."

"Eating contest? I'm ready," quickly responded Barnes.

"Not on your life. My boy bids fair to eat me out of house and home now. If we had a contest, he would be like our African elevator man. Didn't you ever hear about him and his watermelon?"

"Why a man showed him a big juicy watermelon, and offered to bet him a dollar he couldn't eat it all inside a half hour from start to finish. So he took an option on the bet for an hour's preparation, hurried home, came back, cleaned up the melon, pocketing the dollar.

"How did he prepare?" asked Barnes with interest, ruler poised in one hand, pen knife in the other.

"It developed later that he had a similar melon at home. So he tackled it and finding he got away with it in the time set, hustled back and ate the second melon."

"Then what is the contest in which I am to figure, if not in the melancholy line?" asked Barnes.

"Melon-choly? You mean melon-cholic," responded the G. M. "I was going to pit you against each other in whittling. My boy has already worn out two blades of the knife Jimmy gave him, and his fingers all testify to his acquaintance with the tool box accompaniment."

"All right. You furnish the material."

"Nothing doing. Lumber is too scarce. We are having too hard a time as it is getting selected pine for pallets and molds. I had rather feed you."

BARNES EXPLAINS SYSTEM

"Then let me suggest a contest," said Barnes. "I am ready to proceed with the discussion we had a few days ago. You remember the tabulation we had of the sales and of the material made up. I made an extract, which I was just cogitating over when you appeared. Then Baldwin and I revised the original sheet and brought it up to date. He has it now in his room, fastened up to the wall with thumb tacks. He spends most of his time now looking at it."

Pausing for breath, he continued, "You remember how we dug up the surplus of number 165 made up, and the shortage of number 23 shapes?"

The G. M. nodded.

"Well, this extra covers these two shapes only. It shows that status a few days ago, when the big sheets were made."

	No. 23	No. 165
Burkett Steel Co.		1,000
Clayton Iron Co.	4,500	2,000
Murray & Co.	2,500	1,000
Parker Coal Co.	500	2,500
Rawson Furnace Co.	7,000	
Shattuck Smelting Co.	500	3,500
Total orders	15,000	10,000
In Stock	1,000	
Kiln 8	7,000	2,000
Kiln 6		6,000
Kiln 3		6,000
Total available	8,000	14,000

"Now suppose these three kilns are unloaded in the order named, 8, 6, 3. How are the contents to be combined with the material in stock, and applied to the orders? What's your solution?" and Barnes leaned back expectantly.

"First, I would dispose of the Rawson Furnace Co. order. That would take care at once of the 7,000 number 23 shapes in kiln 8."

"And then?" queried Barnes.

"Then the Burkett Steel Co. would take care of 1,000 of the number 165 shapes in the same kiln."

Barnes crossed off these items, the revised sheet being as follows:

	No. 23	No. 165
Clayton Iron Co.	4,500	2,000
Murray & Co.	2,500	1,000
Parker Coal Co.	500	2,500
Shattuck Smelting Co.	500	3,500
Total orders	8,000	9,000
In Stock	1,000	
Kiln 8		1,000
Kiln 6		6,000
Kiln 3		6,000
Total available	1,000	13,000

"Now let me see," said the G. M., rubbing his ruddy head thoughtfully. "We can't ship either of the first two orders, because we haven't the number 23 shapes. But thank fortune there are enough for the last two orders. So we will take care of them. Now what's the verdict?"

Striking out these two, the final score stood thus:

	No. 23	No. 165
Clayton Iron Co.	4,500	2,000
Murray & Co.	2,500	1,000
Total orders	7,000	3,000
In Stock		7,000

"As it stands now," explained Barnes, "you have disappointed two customers out of the original six, and stocked 7,000 number 165 shapes—two full car loads. What is more, that is exactly what was done by the plant in unloading these kilns. The 7,000 number 23 shapes in kiln 8, and the same number on the Rawson Furnace Co. order just naturally seemed to gravitate towards each other, like the opposing poles of a magnet. Then the others followed logically in the same order as you have outlined."

"Then it looks as tho my plan was quite practical, at any rate," said the G. M.

"Let us take a crack at it this way," suggested Barnes. "We have orders for all the number 23 shapes available. Suppose we distribute these in such a manner as to move the maximum quantity of number 165 shapes, of which we have a surplus."

"Looks logical."

COST OF REHANDLING CARS IS SAVED

"Then that process eliminates at once the Rawson Furnace Co., since it does not move any of the excess shapes. So, after all the other orders are taken care of, and the surplus put into stock, the show-down is as follows:

	No. 23	No. 165
Rawson Furnace Co.	7,000	
In Stock		4,000

"Had this method been used, one more car would have been shipped direct from kilns. One more customer would have been satisfied. One less car would have been stocked. The Accounts Receivable would have been greater by that much. The cost of rehandling this car later on would have been avoided. The men who now must pick up that stock would be released for other work. And we are supposed to be using every means of eliminating waste, and conserving labor, as a patriotic necessity. Every single car, which as a result of lack of planning, has to be twice handled, is a waste of effort and a loss financially. And the loss is no less real because it is not in the limelight. In fact, it is all the more dangerous because it is obscured."

"I can realize all that," said the G. M. "So you would use those large sheets to plan the unloading of kilns so as to make as little rehandling as possible, moving the maximum quantity direct to cars. I agree with you that this would result in a decided saving."

"I was sure you would. Without these records, it is like playing chess with a skilled opponent. He pushes forward a piece, you promptly capture it, and in return he captures several pieces and check-mates you. In unloading kilns, you go after the first car in sight. Your antagonist, Inefficiency, who takes full advantage of every false move, dumps several of your remaining cars into the discard. Material goes overboard. We lose, they lose, the nation loses."

"You remind me of how we used to conjugate the verb 'amo' when boys at school studying Latin, Amo, Amas, Amat, which being interpreted is, I love, You love, She loves," with a glance from Barnes to Miss Lane, which caused Barnes to bend more closely over his carving. "Only you conjugate it, I lose, You lose, He loses.

But you can make your case still stronger. We not only play chess with a powerful and relentless antagonist, with cars of brick for pawns, but without your sheets one sees only part of the board. Who should make up these unloading schedules? Your department?"

SALES DEPARTMENT RESPONSIBLE FOR SHEETS

"I certainly would like nothing better than to work at these problems. They are veritable puzzles. A new one very day. But it doesn't belong in my field," he continued, regretfully. "Only the sales department, assisted by someone from the operating department of the plant involved, can work them up satisfactorily. Mr. Baldwin and I discussed this feature when we were working up the sheets he is now using. The operating department will know what will be best suited to their conditions, and the sales department will know what modifications may be made in current orders so that they may be physically easier to handle."

"I guess you people are right. Of course I knew you and Mr. Baldwin would thrash this out together in an efficient manner. I shall be decidedly interested in how it turns out."

"You would get fooled if you attempted that. Securing these results is like working in the farmer's potato field. Asked how the potatoes turned out, he said they didn't turn out at all. Everyone had to be dug out."

At this parting sally, the G. M. made his escape into the sales manager's office.

CHARM IN KEEPING WAIFS AND STRAYS MATCHED

"Works like a charm," said Baldwin, enthusiastically, distributing his arms and legs in angular attitudes of which only he seemed capable. "See my wall display?" Suppose some fellow phones in. Wants a car of this that and the other. I hot foot it to the map, see what is on order and how much is made up. Come back to the phone and tell him what's what."

"So you think this an improvement over the old method?"

"Improvement? It's like an arc light compared to a candle. And what that arc light showed was a plenty. Everything one could think of, and then some. Odd pieces with no corresponding pieces to complete the sets, so that the forerunners would have to be dead stock until companion pieces could be made up."

"And when, under the old system—or rather, lack of it—would the companion pieces be made up?"

"Search me. I'm no prophet. But by turning this search light on the supply we soon found the waifs and strays, so we have listed the parts required to make the various sets complete. Then we found that, with certain shapes in stock sufficient to take care of orders, more were made up when the order was received at the plant, instead of drawing on the surplus already reposing in the shed. We found surpluses of material rarely called for and scarcities of standard shapes which should always be under way. Some parts of certain orders were made up in advance of others, so that the advance shapes must go into winter quarters until the rear guard should have a chance to catch up."

"How did you and that live wire from the plant make out with your scheduling of shipments from those kilns? Is it going to pan out as we had hoped?"

KILN STATUS AT FINGER TIPS

"You can bet your thrift stamp, it is," declared Baldwin with a characteristic wind mill gesture. "We had a seance over current orders and kiln contents. We made a list of all the materials in the kilns ready to be emptied.

Liberty Bonds Are Ammunition for Uncle Sam's 4,000-mile Gun.

Under these we put, one after another, various orders to which these might be applied, applying the cut and try method of some carpenters. Finally we decided on the selection which would put the maximum of the available material on the cars. We scrutinized each item as we ticketed it for shipment, to see that they would not, by a too hasty farewell, gum up some later orders which are coming along in later kilns. Then we made duplicate lists representing our conclusions, one for me, one for him. Each day he phones and puts me next to what they are loading that day. Yesterday a man called in reference to his car. I told him right off that the whole shooting match was ready, and the empty on the siding in which shipment was to be made them. This was almost as gratifying to him as it was pleasing to me!"

"I can share your enthusiasm," agreed the G. M. "It certainly makes a good impression on one to be told concisely when his order is to be filled."

"Then this morning another fellow calls up. He wants some additional shapes. I turned to my list and found, not only that their car was listed for prompt loading, but, what was more to the point, the extra shapes he wanted were in the same kiln, as yet unassigned. I was able to close up the transaction at once. I told him we could hustle everything right out. Now without those sheets," with a sweep of his hand toward the newly decorated wall, "how on earth could I ever have solved the problem?"

"I can tell you of one process," answered the G. M. "When I was at the plant as superintendent, feeling that I was rattling around in a job several sizes too large for me, the sales manager at that time used to call up just when I was busiest, asking when we could ship a certain order. I suppose he felt he had no option in the matter, but it certainly did seem to me at times that if the customer could wait an hour or so, I could figure out an answer that would suit him just as well and suit me a great deal better. And indirectly, suit the company far better as well. But there being no help for it, I would drop everything else, take a list of the material demanded, and find where one could first lay his hands on it. For example, take the Rawson Furnace Co. order for a car of number 23 shapes. It was loaded out; it is now shown by Mr. Barnes that this was the last thing one should have done, since it involved the ditching of two other car loads."

BALDWIN CAUSES BLUNDER

Baldwin flushed up. "How did you know I got after the superintendent to find how soon he could load up that car?" asked he, with no little embarrassment.

"I didn't," exclaimed the G. M. "I had no idea you did. Neither did Mr. Barnes. He simply showed that in so doing we had stood in our own light, and was under the impression that the superintendent had just naturally taken that course, with no outside suggestions. At any rate, he might have done so anyway, as I myself demonstrated."

"Well I never had any idea it would cause all that trouble," apologized Baldwin. "They just called in, and I called the plant. There was nothing else for me to do. We had no means here of knowing. But I certainly did not mean for him to put himself out. A week or so later would have done just as well."

"That's all right," said the G. M. "The only difference now is that we are finding out what devious paths we have been taking. We are like the man who walked across a ten acre field thru a deep snow. Upon looking back at the end of the journey he found he had perambulated over twice as much territory as necessary. This would not have been apparent if he had made the trip in the summer time. He would doubtless have felt that he had taken the most direct path possible. But from this time on we may hope to straighten out paths."

Baldwin looked relieved. "You remind me of how once I was talking with a friend who had just bought a new safe. I jokingly told him if I had been in his place, I would not have written the combination in a book and then have locked the book up in the safe for protection. He said, 'Do you know, I didn't think myself how foolish that was until after I had done it!' And I had no idea of his ever having done such a trick."

"It seems to me one is so liable to economize at the wrong end. Of course, even when one takes account of all the known factors, there is always the possibility that with greater knowledge, greater economies could be effected. But in a case of this kind one is too likely to look at the salary of the high-priced man who is doing the planning, and to be blind to the saving. Instead of 'millions for defense and not a cent for tribute,' we say, not in words but unfortunately in deeds, 'Thousands for waste, but not a cent for prevention.' We are too often apt to judge results by the amount of bustle a man exhibits. A man whose desk was piled up was telling how busy he was. A friend who had been watching him said, 'You're mistaken. You're not busy. You're only confused!'"

"Somewhat like the floor walker. A man stepped up to him and asked, 'Do you keep stationery?' He said, 'Indeed I don't. If I did, I'd lose my job.!'"

* * *

Ask U. S. To Let Chicago Help Win War

A delegation, which is headed by Thomas Carey of the Carey Brick Co., Chicago, Ill., and president of the Co-operative League of Building Trades and Industries, has gone to Washington, armed with maps and documents, to show that there are facilities along Lake Michigan, the Calumet river, the drainage canal, and the north and south branches of the river for simultaneous construction of 100 ships of 3,700 tons, if constructed as a whole, or of 9,000 tons if constructed in halves to be assembled after passing the Welland canal.

"There are 50,000 unemployed men in Chicago, largely in the building trades," said Mr. Carey. "This labor is available for war work. There are facilities for housing 450,000 men, 200,000 of them within a radius of four miles of State and Madison streets (the center of the downtown district). There is building material in stock in Chicago sufficient to carry on any building operations the government may require. There are 175,000,000 common brick in stock and 40,000,000 facing brick; 110,000 barrels of cement; 25,000,000 feet of lumber of all dimensions; $4,000,000 worth of pipe and electrical fittings and 200,000 cubic yards of gravel."

The committee will concentrate on the effort to induce the government to begin shipbuilding operations at Chicago, but will urge other claims for munitions plants and other war contracts also.

* * *

Government Buys Jugs for Embalming Fluid

The government has purchased half a hundred five-gallon jugs from the Nelson McCoy Sanitary Stoneware Co., Roseville, Ohio, which are to contain embalming fluid. The order will be shipped shortly. These jugs will hold enough fluid to embalm several thousand bodies.

Invest in a Liberty Bond Today.

CONTROLLING COMBUSTION *by the* USE *of* INSTRUMENTS

This Article Explains in a Very Clear Manner How to Use the Flue Gas Analysis to Bring About Best Combustion and Then How to Use the Draft Gauge to Repeat These Conditions

By R. K. Hursh,

Professor of Ceramic Engineering, University of Illinois, Urbana, Illinois

THE BURNING OF FUEL involves the rapid chemical combination of the combustible constituents with oxygen of the air and the evolution of a quantity of heat determined by the composition of the fuel. The products of the reaction are gases which become heated to a high temperature and serve as carriers of the heat to the place where it is to be used. In the boiler the gases give up a part of their heat to the tubes for producing steam and in the kiln a part of the heat is taken up by the ware as the gases pass thru to the stack. A part of the heat which has been generated by the combustion is carried away in the hot stack gases and is thus lost. The amount of this loss depends upon the quantity of the gases and their temperature. The greater the quantity of gases and the higher their temperature the greater the stack loss.

To supply the oxygen for combustion a certain quantity of air must be supplied to the fires. If a greater amount of air is supplied than is actually required for the combustion the excess merely passes thru the furnace unchanged and serves to increase the quantity of stack gases, thereby increasing the stack losses. To secure efficient furnace operation it is therefore essential that great excesses of air supply be avoided. This result can be attained thru control of firing conditions, by the use of gas analyses and draft measurements.

The principal combustible constituents of fuel are carbon, hydrogen and some sulphur. When a sufficient amount of air is supplied for combustion the carbon unites with oxygen to form carbon dioxide. If the supply of air is insufficient for perfect combustion a part of the carbon will form carbon monoxide and reducing conditions result since this gas readily takes up more oxygen from other sources than the air. Reducing conditions are sought for certain operations in kiln firing where flashed colors are required but in general perfect combustion is desired and the carbon burns to carbon dioxide.

GASES IN THEORETICAL COMBUSTION

Air contains 21 per cent. oxygen and 79 per cent. nitrogen by volume. When just the theoretically required amount of air is used for burning pure carbon the volume of carbon dioxide produced will be equal to the volume of oxygen used and the resultant gases will consist of 21 per cent. carbon dioxide and 79 per cent. nitrogen. If an excess of air is supplied the products of combustion will be greater in volume by the amount of excess air and will contain the excess of oxygen. The proportion of carbon dioxide will be decreased in proportion to the excess air supplied and the composition of the gases will be 79 per cent. nitrogen and 21 per cent. carbon dioxide and oxygen combined.

If the amount of excess air is 100 per cent., that is equal to the amount theoretically required, the products of combustion will contain 10.5 per cent. carbon dioxide, 10.5 per cent. oxygen and 79 per cent. nitrogen but the total volume of the products will be twice as great as in the case of only the theoretically required amount of air.

The effect of excess air in the combustion of pure carbon is shown in the curves of Figure 1. When 200 per cent. excess air is supplied the proportion of carbon dioxide in the products of combustion or flue gases is reduced to seven per cent. while the oxygen has increased to 14 per cent. The volume of the flue gases is then three times the volume produced when only the theoretically required amount of air is supplied. At a given temperature of the stack gases the heat lost is then approximately three times as great as it is when only enough air is used to supply the oxygen actually required for the combustion.

When hydrogen is a constituent of the fuel a part of the oxygen in the air supplied combines with this to form water vapor or steam. The amount of steam formed is twice the volume of oxygen combining with the hydrogen. Hence the total volume of flue gases in this case is greater than the volume of air supplied. The difference is equal to the volume of oxygen used to burn the hydrogen or one-half the volume of steam formed. The sum of the carbon dioxide and the oxygen is no longer equal to 21 per cent. of the volume of flue gas but will be less than that amount. The proportion of nitrogen will also be changed somewhat.

ANALYSIS OF DRY GAS ONLY OBTAINED

In the analysis of flue gases the steam is condensed and the results show only the proportions by volume of the other constituents. In other words, the analysis shows only the relative volumes of the "dry gases" present. The volume of dry gases is therefore somewhat less than the volume of air supplied, the difference being equal to one-half the volume of steam resulting from the combustion. The sum of the carbon dioxide and oxygen will be less than 21 per cent. and the nitrogen will exceed 79 per cent. As the amount of excess air is increased the proportion of oxygen increases and the sum of carbon dioxide and oxygen

No Time to Hem and Haw—Buy Liberty Bonds to the Limit.

approaches 21 per cent. as will be seen in the curves of Figure 2.

Sulphur is usually present in fuels in only a relatively small proportion. In coal it is in such form that it is generally only partially consumed and the amount of the product is small. Sulphur combines with oxygen to form a quantity of sulphur dioxide equal to the volume of oxygen used. In the analysis of the flue gases the sulphur dioxide is separated with the carbon dioxide, thus increasing the apparent proportion of that gas. Its proportion, however, is so small as to be negligible in the case of all ordinary fuels, and its effect on the gas analysis is less than the errors ordinarily entering into that determination.

Bituminous coal is the most commonly used fuel in the firing of kilns. The combustible constituents are carbon, hydrogen and sulphur. These combine with the oxygen of the air to form carbon dioxide, steam and sulphur dioxide. The products of combustion in ordinary practice will contain these three gases together with some excess oxygen and nitrogen from the air supplied. In the analysis of the flue gases only carbon dioxide (including the sulphur dioxide), oxygen and nitrogen will appear. The proportions of these will vary with the amount of excess air supplied for the combustion and this will also determine the quantity of the flue gases.

EFFECT OF EXCESS AIR ON ANALYSIS

As an illustration, consider the combustion of a bituminous coal having the analysis—carbon, 60 per cent.; hydrogen, 4 per cent.; oxygen, 6 per cent.; nitrogen, 2 per cent.; sulphur, 4 per cent.; ash, 10 per cent.; moisture, 14 per cent. by weight. This may be considered as fairly representative of middle western coals of this type. To burn one lb. of this coal would require 108.3 cu. ft. of dry air, measured at 70 deg. Fahr. and 30 inches barometric pressure. The combustion would produce 19.4 cu. ft. of carbon dioxide (assuming one-half the sulphur is burned), and 85.8 cu. ft. of nitrogen, all measured at the same temperature and pressure. A gas analysis (dry gases) would show 18.6 per cent. carbon dioxide and 81.4 per cent. nitrogen. (It is to be noted that the proportion of carbon dioxide in the flue gases from such a fuel is less than that obtained in burning pure carbon.)

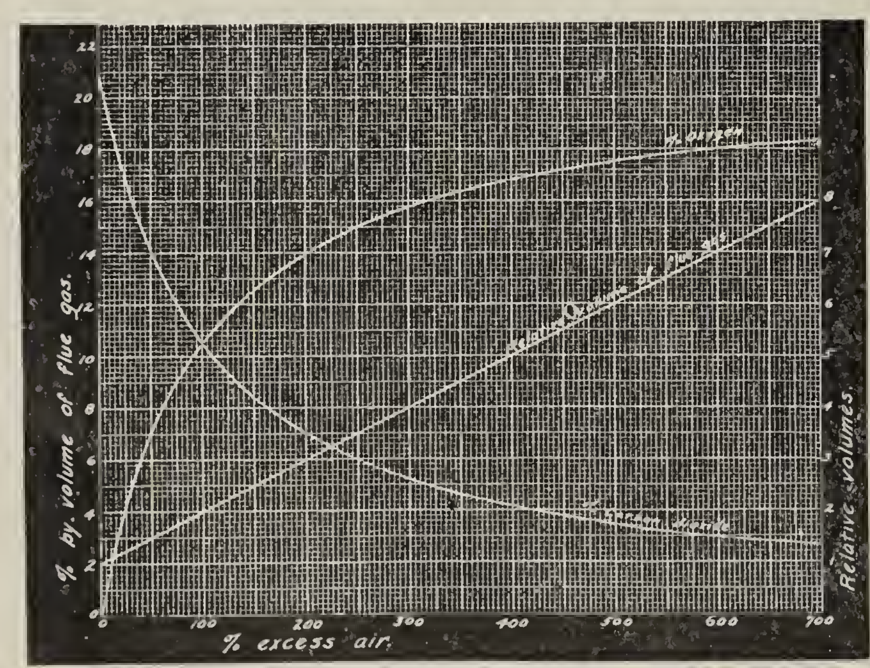


Fig. 1. This Graph Shows the Effect of Excess Air in the Combustion of Pure Carbon, Especially in Regard to the Relative Volume of Flue Gas to Which the Heat Loss in the Stack Gases is Proportional.

The effect of excess air on the proportion of carbon dioxide in the flue gas (for this fuel) is shown by the curve marked per cent. carbon dioxide in Figure 2. Suppose a flue gas analysis has shown 3 per cent. carbon dioxide. Following the horizontal line for 3 per cent. carbon dioxide on the chart the curve is seen to intersect it on a vertical line indicating 500 per cent. excess air. In this case the quantity of air supplied for combustion has been six times as great as the amount theoretically required for the reaction which is taken as 100 per cent. For the same conditions the oxygen content of the flue gases would be 17.6 per cent. as shown by the per cent. oxygen curve. The volume of flue gas is shown by the third curve to be six times as great as that resulting from combustion with only the theoretically required amount of air. This means a proportionate loss of heat in the flue gas.

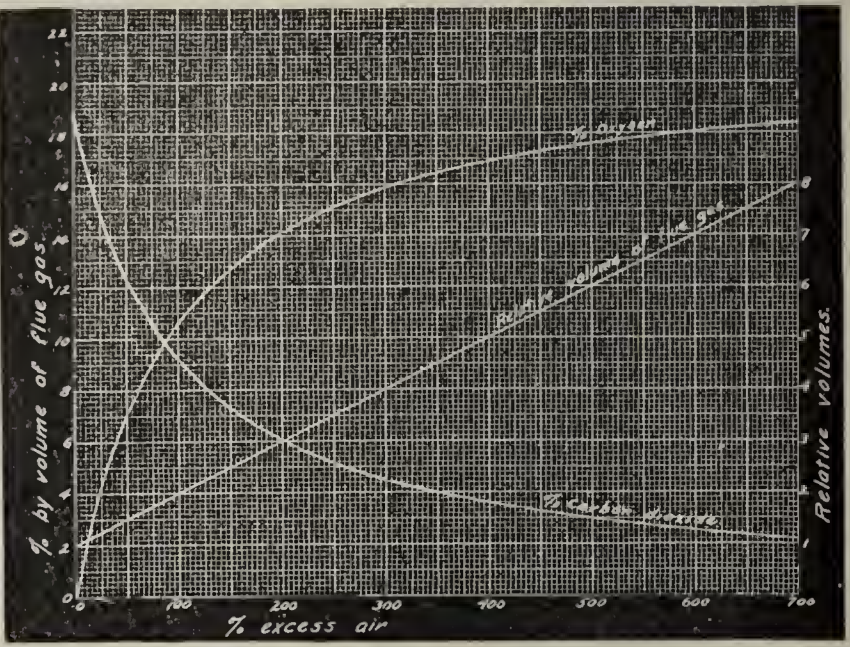


Fig. 2. These Curves are Similar to Those of Figure 1, but Take Into Consideration the Amount of Hydrogen in the Fuel.

A formula which is given for the calculation of excess air from the results of the flue gas analysis is

$$\frac{100}{100 - 4.76 \times \text{per cent. oxygen in flue gas}} = 1 + \text{excess air.}$$

For the above conditions we have

$$\frac{100}{100 - 4.76 \times 17.6} = 6.17, \text{ or excess air} = 6.17 - 1 = 5.17 \text{ times}$$

that theoretically required or 517 per cent. The results from this formula are only approximately correct for fuels containing hydrogen since it is based on the assumption that the volume of flue gas is equal to the volume of air supplied.

FORMULA FOR DETERMINING EXCESS AIR

In many cases it is not necessary to make a determination of the oxygen in the flue gases and a formula for excess air based on the carbon dioxide content is more desirable. The above formula may be modified for the purpose and given as

$$\frac{100}{4.76 \times \text{per cent. carbon dioxide}} = 1 + \text{excess air.}$$

By calculation with this formula for the above conditions $\frac{100}{4.76 \times 3} = 7$ or excess air=7—1=6 or 600 per cent. Referring to the curve for CO_2 in Figure 1 it will be seen that in burning pure carbon an excess of 600 per cent. air gives 3 per cent. carbon dioxide. But in the case of a coal such as here considered the result from this formula is incorrect.

A better and more generally useful formula to be used

Liberty Bonds or Kaiserism—Which?

for calculation of excess air when burning bituminous coals is $100 \times \frac{100}{5.5 \times \text{carbon dioxide}} - 1 =$ per cent. excess air. For the fuel given this formula will give quite accurate results and will be sufficiently close for use in the case of any bituminous coal. Having determined the content of carbon dioxide in the flue gas the amount of excess air being supplied can be quickly determined. For 4 per cent. carbon dioxide the excess is $100 \times \frac{100}{5.5 \times 4} - 1 = 355$ per cent.

It should not be expected that combustion can be maintained with just the theoretically required amount of air supplied. In all furnaces it is necessary to admit a certain amount of excess air to insure thoro combustion of the fuel. In general the amount of this necessary excess ranges from 50 to 100 per cent. altho under exceptional conditions somewhat less may be safely used. For efficient combustion we may expect to have 9 to 13 per cent. carbon dioxide in the flue gases. A less amount indicates too great an excess of air while more than 13 per cent. may be accompanied by some carbon monoxide and a tendency to reducing conditions.

DRAFT GAUGE FOR REGULATING AIR SUPPLY

Having the flue gas analysis as a means of showing what the combustion conditions are and what amount of excess air is passing thru the furnace, some means of regulating and controlling the air supply becomes essential. Air is forced into a furnace by an excess of pressure of the outside air over the pressure of the hot gases in the flue and stack. This difference in pressure is due to the higher temperature of the stack gases and their consequent decreased density. It is the force usually termed "draft" and gives motion to the gases thru the kiln and flues and overcomes the frictional resistance to their passage. Draft may be measured (approximately) by means of a delicate manometer or draft gauge which consists of a bent tube partly filled with a liquid, usually a light oil of about the same density as kerosene. One end of the tube is open to the air and the other is connected by a tube with the flue. The difference in pressure of the outside air and the gases in the flue causes a difference in level of the liquid in the two arms of the tube which is measured on a scale fastened along the tube. To measure small pressure differences in flues the tube is arranged at a low inclination so that small differences in level of the liquid will be magnified on the scale. Such an arrangement is shown in Figure 3. The connection with the flue must be between the kiln and the damper.

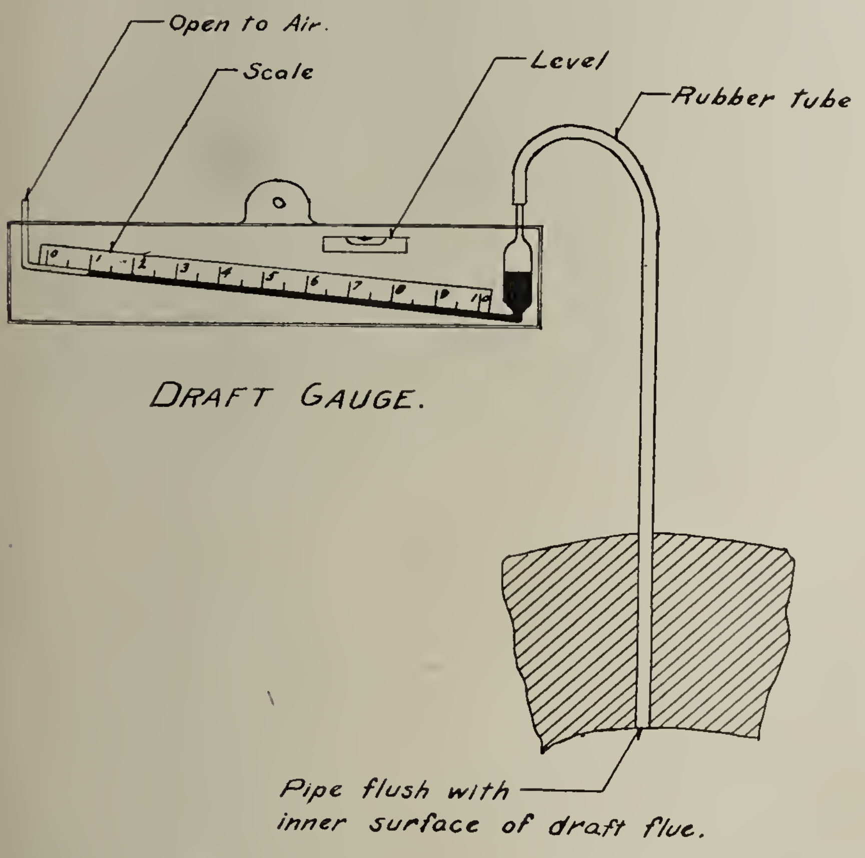


Fig. 3. Shows An Arrangement of the Draft Gauge for Measuring Small Differences of Pressure In the Flues. The Connection with the Flue Must be Between the Kiln and the Damper.

DAMPER WILL CONTROL AIR SUPPLY.

The best means of controlling the supply of air entering the furnaces of a kiln is by means of a damper in the stack flue. By partly closing the damper the resistance to the flow of the gases is increased and the amount of draft available for furnishing the air to the fires is decreased. The draft gauge will then show a lower reading and the percentage of carbon dioxide in the flue gases will increase. If the analysis has shown too low a content of carbon dioxide, adjustment of the damper should be made until a subsequent sample of the gas shows the desired amount. A reading of the draft gauge should then be taken and recorded on the burning record together with the time and the temperature of the kiln. A series of such adjustments and draft readings should be made so that a record of the burn may show the proper amount of draft to be carried at each period of the firing.

CHART SHOWING DRAFT RECOMMENDED

From the records thus obtained a burning chart may be made which will show the rate of temperature increase to be followed by means of a time-temperature curve and the proper draft to be maintained at the various stages of the firing. This chart will constitute a standard to be followed in subsequent burns. The pyrometer then becomes the guide as to rate of firing and the duration of the burn so that the kiln is neither unduly hurried nor is an unnecessary amount of time consumed in the burning. The draft gauge is the guide for the maintenance of efficient combustion conditions. At any given kiln temperature the fireman may refer to the chart to see what the proper draft should be and adjusts his damper accordingly. Standardized burning, with the possibility of more closely regulating conditions and of duplicating results from time to time, is thus substituted for the usual hit or miss procedure. Its advantages in securing uniformity and economy are too obvious to require discussion.

TO NOTE CHANGE IN FLUE ARRANGEMENT.

The use of flue gas analysis is shown to be a valuable means of determining existing conditions of combustion and a guide for the correction of deficient or too great excess of air supply. As such it is an invaluable guide in standardizing burning procedure. When a standard firing schedule has been once established with temperature and draft records to guide the fireman the regular use of gas analysis is no longer necessary. Its value thereafter is as a means of checking up the firing from time to time and in making such corrections in the schedule as seem desirable. The draft gauge is an aid in standardizing and becomes the means of control of combustion conditions in following a routine schedule. Both gas analysis and draft readings, together with temperature records are available as means of determining advantages or disadvantages of modifications in flue arrangement, fire-box design and burning methods in their effect on fuel economy.

Have You Helped Uncle Sam by Buying Another Liberty Bond?

ALIENS EMPLOYED *in* AMERICAN INDUSTRIES

Industry Faces a Grave Problem in the Unfriendly Employe, Alien or Disloyal Citizen—The Outline Below Indicates a Practical Method of Solving This Problem

FIRST OF ALL take a census of all employes and divide them into four classes: native born, naturalized citizens, friendly aliens, alien enemies. If they are naturalized citizens of enemy alien descent they had better be classed industrially with alien enemies until something of their history and record is known. Let us insist frankly that a man born on another soil has to prove himself for America. A certificate of naturalization granted under our inadequate requirements, where often a job is the goal, is not enough to class him with a native American.

Second—make an analysis or a map of your plant showing its vulnerable spots. Where will a fire do the greatest damage, where is waste accumulated, what hydrant is most vital in extinguishing a fire, where is the control of your lighting system; and how accessible is your surtax bond; where will an explosion cause the most damage; what machines are most vital or difficult to replace, where can goods in transit be tampered with easiest? A dozen other things have already suggested themselves to you.

"SAFETY FIRST"

Now find out what kind of workmen are in charge of these vulnerable points. If they are enemy aliens, transfer them at once. Don't wait to have them prove their loyalty. Some other point in the shop will not decrease their efficiency and it may increase your safety. The fire brigade and the man who can reach the hydrant the quickest ought to be loyal American workmen—just as men in the boiler room and at delicate machines should also be. What are you paying men at these points, and what do you know about them?

Surveillance and guards and sentinels are the next most important considerations. The number and location of these should be determined by the numbers and location of alien enemies and persons of doubtful loyalty, and second by the strategic points to be guarded. Both systems are necessary—one for men, the other for places. They check each other and insure safety. With only the one method there will at various times be exposed points. One agent may be diverted but two or more are more difficult to divert simultaneously.

SAFEGUARDING AN ENGINEERING FEAT

When fences are put up and windows barred and guards established, do you consult your factory plan to see that every vulnerable part is included or do you do like one concern in New England—leave your transformer out in a field, fifty feet outside of the fence, where an enemy with a tin can of powder could paralyze your plant? Safeguarding is a job of engineering not a make shift job that anyone can do. It would be interesting for each industrial leader to find out who handled the work in his own plant.

Lighting is the next important essential. Every possible improvement should be made, vulnerable points should be especially well-lighted. Keep alien enemies and persons of doubtful loyalty in the light all of the time.

Keep outsiders out. This is no time for outsiders or persons without official authority or business in war plants. Verify credentials of visitors. When they get in, see that they go only to the place they are supposed to go. Don't send them alone. Escort them in, stay with them, and escort them out.

One way to keep outsiders out is to reduce your labor turnover. Every time a new man is taken on who is not known, it increases the risk. Since the registration of enemy aliens in February, you can ask every new employe if he has such a registration card. If your shop is handling war supplies of the first magnitude try to get every alien enemy out, not by thowing him out, but by exchanging with some industry that is not manufacturing war supplies. A man thrown out of a job because he is an alien may go to another plant in bitterness of spirit and wreck it for no reason than to get even with his first employer. You help the government when you help another employer protect his own plant.

Permits should be required by employes to go to different parts of the plant. A general tag is not sufficient. An alien enemy in one place may be a low risk; in another a high risk.

COIN A NAME FOR YOUR SUPERVISOR

Appoint some employe as an aliens' captain in the plant and give him a committee if it is advisable. It will be his business to spot anti-American propaganda and sentiment, to make such shop plans and maps as have been suggested, supervise registrations, recommend transfers and have the guards and sentinels under his direction. Call him by any preferred name but give him the whole job of looking after the safety of the plant from the man-power end.

Take a personal interest in the alien. If it is necessary, set up an information bureau to help him understand drafts and regulations and registration. If he wants to learn English and become a citizen, help him do so. See that he gets American information on bulletin boards, in pay envelopes and otherwise, to offset the anti-American material sent him or told him. (Over 140,000 sets of Civic lessons in foreign languages have already been handled by industries thru pay envelopes.)

INSURE A FOOL-PROOF, BOMB-PROOF PLANT

When this intelligent handling of alien enemy and those of doubtful loyalty is in operation, the plant is ready for another step—the systematic removal of every possible cause for unrest, dissatisfaction, disloyalty and disturbance. This will require a close contact with the workmen, and another analysis of the plant, if not a map. Is it wages, or hours, or foremen or the employing and dismissal method, housing or substitution of women? Whatever it is, it constitutes the medium thru which the German agents work and it is their chief stock in trade next to the love for the fatherland. In dealing with German spies, a plant has to be fool-proof as well as bomb-proof. The man who strikes may think it is bad housing or treatment; the German propagandist knows it's German efficiency playing thru American negligence and carelessness.

The American government cannot protect the plant that will not protect itself, and the invisible war being carried on in American industries must be won by American manufacturers or the visible war in Europe will be lost.

* * *

INDUSTRIAL USES *of* PAVING BRICK

VITRIFIED PAVING BRICK are distinctly not a one-use material, according to Maurice B. Greenough, chief engineer of the National Paving Brick Manufacturers' Association, Cleveland, Ohio.

Altho made primarily for street and road paving, there always has been a considerable use of the material in and about industrial plants, where floors and drives capable of withstanding hard service are demanded. Take for instance the Willard Storage Battery Co., of Cleveland. This company prides itself on the cleanliness of its plants, and in creating equal pride among its employes in keeping the plants clean. Thousands of tons of pig lead used in making batteries are kept in storage piles and trucked about the plant on small electric conveyors. The aggregate load on these conveyors frequently amounts to four tons. Here then, are the reasons for a floor paving that is clean and originates no dust, that can support immense quiescent loads and that is not broken down by constant trucking. Vitrified brick was chosen as the logical material. Still another use was found here for paving brick in building immense tanks for the acid baths. Brick was found to be the only material that could be used without deteriorating.

Thousands of Tons of Pig Lead of the Type Shown in this View are Trucked Over a Floor of Vitrified Brick, the Logical Flooring Where Heavy Trucking is Common.

But the use of paving brick is not always confined to floor paving. The Artificial Silk Co. built its whole plant of paving brick. The size of the brick lends itself well to a pleasing architectural treatment as well as making for economical construction. Particularly in wall construction, or foundations where it is essential to exclude the possibilities of seeping water, paving brick gives first-class service.

There are many industrial concerns that require, about loading and shipping platforms, a very durable material. Such places are invariably subjected to continuously heavy loads, often concentrated within narrow confines. The Telling Belle Vernon Co., one of the largest milk distributors in the Middle West, is one of these firms. It paved its loading area at its big Cleveland plant with brick on a green concrete foundation, using an off grade brick instead of No. 1's. This practice, however, is not to be generally recommended.

A Whole Plant Built of Paving Brick is Shown in the Above View. Economical Construction as well as a Pleasing Appearance Lends Value to the Use of Paving Brick for this Purpose.

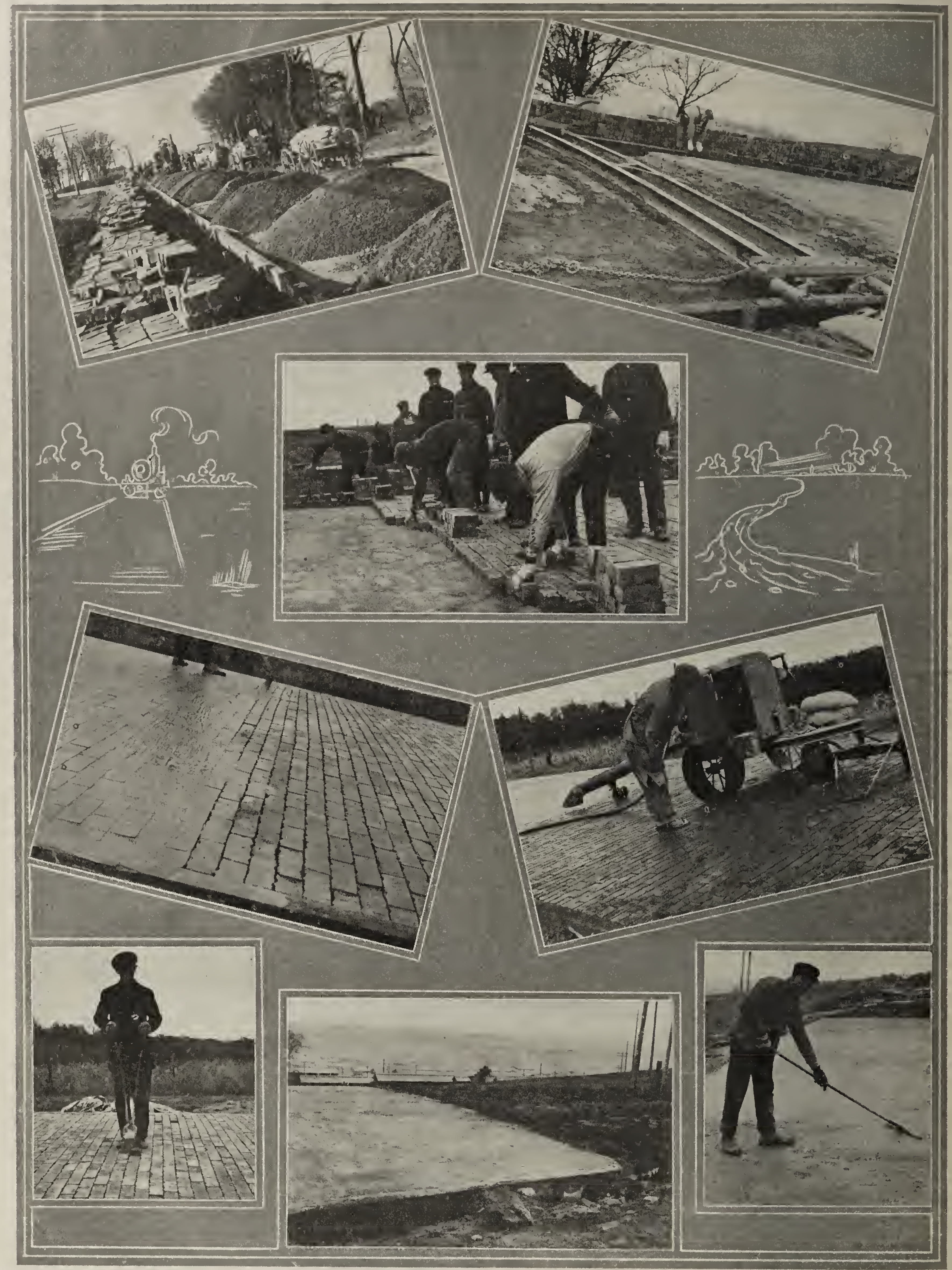
The Peerless Motor Co. built a testing track of brick. This track completely circles the automobile company's plant. Here all the trucks it manufactures are given their tuning up before being delivered to the buyer.

One of the frequently cited instances of the use of brick in special places, is the famous alley in Terre Haute, Indiana, leading from Wabash Avenue to the Big Four Railroad yards. The brick were laid in the green concrete about fifteen years ago and in spite of extremely heavy duty thruout this long period, there are few evidences of wear.

Railroads themselves frequently pave spaces between their freight yard tracks with brick.

Industrial Concerns Requiring a Durable Material About Loading and Shipping Platforms Find Paving Brick a Very Satisfactory Material.

Liberty Bonds Are Ammunition for Uncle Sam's 4,000-mile Gun.



These Views Show the Various Stages of Construction of the Military Road Connecting Des Moines, Iowa, with Camp Dodge. This Road Declared to be a "One Hundred Per Cent. Road" is of Monolithic Construction and Twenty Feet Wide. Grading Began on September 24 and by November 24, 47,000 Cubic Yards of Earth had been Removed. Work on the Pavement Proper Began on October 18. After the First Few Days, When the Organization Hit its Stride It Progressed from 400 to 500 Lineal Feet a Day and in Sixty Days Two and One-Third Miles of This Twenty Foot Road Was Completed.

Liberty Bonds Are Ammunition for Uncle Sam's 4,000-mile Gun.

BRICK HIGHWAY *for* ARMY CAMP

DECLARED *to be a* 100 *per cent.* ROAD

WHAT MILITARY AUTHORITIES declare to be the qualities essential in military road construction, are seen to be embodied in the monolithic brick roadway now in service between Des Moines, Iowa, and Camp Dodge, according to the Iowa State Highway Commission Service Bulletin. Ability to withstand rapid and continuous traffic is of prime importance, altho it is significant that military experts agree that the weight of traffic to be supported imposes no more severe burdens than would be required for modern commercial transportation. The standard loading for bridges and culverts of the Iowa State Highway Commission were used in determining these structures, five in number, on the Camp Dodge road and were held to be amply sufficient.

The monolithic brick portion of the roadway was built 20 feet wide in accordance with the view that 20 feet constitutes the minimum width desirable for purely military use. Six foot gravel shoulders were built on either side of the brick to permit the passage of marching men without hindrance to vehicles or to provide room to sidetrack any vehicle temporarily out of commission, without delaying other traffic.

The maximum grade of the road is only 5.1 per cent. Low grades are essential to prevent slowing up of troop movements or transports which would follow when a line of vehicles or men in close succession negotiate a long, steep grade.

HIGH QUALITY OF ROAD COMMENDED

Commenting on the results secured on the two and one-third miles of paving already finished, the Service Bulletin says editorially: "Every foreseen requirement will be met by the type of construction adopted and at the most reasonable cost consistent with these requirements. Two and one-third miles completed are of such a quality that one of the country's leading engineers in this and other types of pavement construction declared it to be a 100 per cent. road."

Grading began on September 24, nine days after the contract had been awarded. Between then and November 24, when grade was practically prepared, 47,000 cubic yards of earth had been moved. Fills were made in six-inch layers. Extreme care was observed to eliminate sod or other vegetable material under the paved portion. Part of the compacting was done with a sixteen-ton gasoline tractor, that proved very serviceable, particularly in the difficult places, altho for the most part a three-wheeled ten-ton roller was used.

Work began on the pavement proper on October 18. After the first few days, when the organization hit its stride it progressed from 400 to 500 lineal feet a day.

Concrete for the base was prepared in an eleven-cubic foot batch mixer equipped with broom and bucket, discharged and moved by a caterpillar tractor. The concrete aggregate was gravel. One sack of cement went into every 5½ cubic feet of gravel, approximating a 1-2-4 mix. Every batch was mixed for one minute or a minimum of twelve revolutions. A quaking consistency was found to be most satisfactory and provisions for uniformity were carefully observed.

The surface of the green concrete base was prepared for the brick with a Parrish multiple template. This template besides striking off the template spread a thin layer of premixed sand and cement over the concrete. The cement and sand were mixed in the proportions of 1-2½ and provided an excellent bonding surface for the brick. The finished depth of base was the same as the depth of brick, four inches. To make sure of a perfectly crowned subgrade the surface was given a final smoothing with a wooden template drawn forward ahead of the concrete and in some instances another Parrish template was used for the purpose. The crown of the brick surface was two and one-half inches at the center, a slope of one-fourth of an inch per foot.

After laying the brick the surface was smoothed with a 700-pound hand-roller 30 inches long. This operation followed immediately after the brick were laid, in order to seat the brick thoroly into the mortar. Careful attention was given to the rolling, to secure a smooth riding surface, altho no particular difficulty was experienced in getting a remarkably smooth surface.

BRICK LAID IN RECORD TIME

One to one of grout was mixed and applied directly from a machine mixer. The brick were sprinkled before grouting to insure penetration of the filler in the joints. The first application of filler was mixed thin, and after it had settled thoroly there followed a second and thicker application. After the grout had hardened somewhat, a two-inch layer of earth was spread on the surface to protect it.

The completion of two and one-third miles of 20 foot monolithic pavement in sixty days was a strenuous undertaking, particularly since little of this type of construction has been built in Iowa. That a job of such excellent and of such good riding qualities was secured is worthy of commendation for all concerned. Aitken and Flutter, of Des Moines, were the contractors, and at the request of the Polk County Supervisors the State Highway Commission assigned F. H. Mann as engineer in charge. Surveys were by S. A. Schackle.

* * *

Brick Man's Flour Sack Raises Thousands

Some time ago, Clarence F. Pratt, a well known brick man and manager of the Pratt Materials Co., Hearst building, San Francisco, Cal., started the "Shriners' Red Cross Sack of Flour," on its journey around the country after all the money it could collect for the Red Cross fund. The sack was recently sold for the eighteenth time and has progressed as far as Charlotte, N. C. At this place it was bought for $1,000 by the Oasis H. K. Temple. One week before Crescent Temple sold the sack for $1,150. The total sales to date are $18,000, all of which has been turned over to the Red Cross. The sack will go to Bridgeport and Indianapolis, after which India Temple at Oklahoma City will sell the sack at its Golden Jubilee. The India Temple Shriners claim that they are going to raise from $50,000 to $75,000 at their sale. The famous Civil War sack of flour, whose total sales were $275,000, brought $40,000 in Virginia City, so Mark Twain says. The nobles of India Temple claim they will pass Virginia City's Civil War high mark. Potentate John D. McGilvray, of Islam Temple, San Francisco, will take the sack to the Imperial Council in Atlantic City in June and it is very probable that $25,000 will be raised at this meeting. Altogether Mr. Pratt expects that half a million will be raised on this sack of flour.

Invest in a Liberty Bond Today.

A PATRIOTIC USE *for* HOLLOW TILE

MANUFACTURERS OF HOLLOW TILE should not lose sight of the appeal coming from Washington for every person in this country to keep poultry to the extent of his opportunity, but should use this as the basis for promoting the sale of hollow tile and widely advertising its advantages over any other material for poultry houses.

The need for poultry raising has never been greater than at the present time, when the war is putting our nation on a new basis of thrift and economy. Waste is being eliminated wherever possible and some of this waste can be turned into dollars by the raising of chickens. The more chickens, the more eggs; the larger the consumption of eggs for home use, the smaller will be the meat consumption, which will mean more meat for the boys "over there." Everyone can help in this conservation program by raising fowls and by stimulating their production thru damp-proof, sanitary poultry houses.

HOLLOW TILE FAR SUPERIOR TO WOOD

"The American Lumbermen" in its issue of March 23, points out the need of small chicken houses on the farm, on village lots and in back yards and advocates the use of wooden structures. While we wish to compliment them upon their aggressiveness, yet we believe that the clay products manufacturer has something far superior to offer in the way of poultry houses of burned clay hollow building tile.

Showing a Very Permanent and Well Constructed Modern Poultry House in Richland, Iowa., Built of Hollow Tile.

HOLLOW TILE WALLS MOISTURE-PROOF

Chickens will not do well in damp places. A poultry house should be on ground that is high and dry so that the water will drain off quickly, especially after a sudden rain. Fowls also require a great deal of sunlight and air. For this reason, it is best that the poultry house be faced to the south and have as much window space as possible on its southern side so that the fowl may get plenty of pure air at all times. A high location, an open southern face, and plenty of ventilation would not make a poultry house dry, tho, if the walls were built of a material that would take in and hold moisture. This is not the case with hard-burned hollow clay tile, for this material will not admit moisture from the outside and will prevent the condensation of moisture from the inside on the walls.

It is also very important that fowls be kept free from vermin, otherwise they soon become diseased and do not thrive. It is almost impossible to build poultry house walls of wood in a way that will not make a lot of hiding places for vermin—places that you cannot reach so as to kill this vermin with disinfectants.

Poultry house walls made of hollow tile meet all requirements. When laid up, they protect the fowl from dampness and cold, because they are made of moisture-proof material and contain a blanket of dead air. There is also no hiding place for vermin and disinfectants of any kind, however often they may be used, would not injure the tile.

This Little Shanty, Which Was Damp, Unsanitary and An "Eye-Sore," was Recently Torn Down and Replaced by the Attractive Hollow Tile Chicken House Shown Below.

Hollow tile are not expensive and make the best kind of a chicken house, whether for on a farm or in the back-yard. Hollow tile houses require little or no repairs and no paint. They will last for generations with little or no expenditure for up-keep. In addition to these advantages, these houses present a very neat and attractive appearance.

APPEAL TO PATRIOTISM THRU ADVERTISING

Now is the time to spread your literature broadcast among the patriotic citizens who are planning to do their bit for the government and among the farmers who are planning to build a larger and more sanitary poultry houses.

This Modern Poultry Building Made of Hollow Tile is the Kind That Will be Constructed if the Clay Products Man is Alive to the Situation. The Advantages of this Type of Construction are Very Ably Brought out By These Two Views.

"Dad, I'm Going Across—You Buy Liberty Bonds."

The COST *of* LIVING *and* WAGES

Showing How in War Times Prices, Wages and the Cost of Living Are Quite Generally Thrown Out of Equilibrium and How War Loans and Taxes Affect General Conditions

By Maurice H. Robinson,

Professor in the College of Commerce and Business Administration, University of Illinois, Urbana, Ill. Read before the Illinois Clay Manufacturers' Association, at Champaign, March 13, 1918

WE ARE NOW ENGAGED in the greatest military struggle in all history, a war in which the issues involved are none other than the preservation of our national ideals, our most precious heritage from the founders of the great experiment in democracy.

To accomplish our national objective the unified strength of the whole nation must be brought to bear, the industrial no less than the military. To fail in our industrial activities at this time would in some ways be more serious than to fail in arms, because it is less difficult to create an effective army than to rebuild or reorganize our industrial system should it once thru internal conflict or external pressure become seriously and radically demoralized.

Leaving out of account those industrial activities carried on by the government, goods are produced and distributed by independent business enterprises. Some of these enterprises are small, others are large; some are managed by their individual proprietors, some by a small number of men associated together as partners; some by a board of directors elected by the owners who are legally bound together as shareholders under the laws governing corporations. All of these enterprises are alike in one particular, viz.: the owners furnish the capital, organize the industrial and financial operations, hire working men at stipulated wages, pay the bills incurred in the course of production and retain any profits that may be made by selling the goods produced at a price somewhat above the cost of production, that is the sum of the costs for capital and labor.

WAGE AND PRICE CHANGES GRADUAL

Under normal conditions, wages as well as prices change very slowly, wages increasing, prices falling, until the owners of the least efficient enterprise in any particular line are unable to retain in their hands, as compensation for their services, more than they would receive if they loaned the capital investment at the normal rate of interest and hired out as managers and superintendents, working for others in a similar capacity and with skill equal to that which they have displayed in working directly for themselves. At this point wages and prices remain comparatively stationary, except as new inventions, improvements in processes and in the efficiency of the typical organization disturb the equilibrium of forces and cause changes in both wages and prices until a new equilibrium is established.

Naturally any war, even one of minor significance so far as the industrial processes are concerned, acts as a disturbing force, throws the industrial machine out of adjustment, and the creaking organization then calls for a diagnosis of the causes and the causes having been found, an application of the proper remedy. If a small war introduces conditions that throw the machinery out of alignment, perhaps out of gear, what should be expected in case of a world conflict, involving the most stupendous forces and extending to the uttermost parts of the earth? To keep the industrial organization running smoothly under such circumstances is of course an impossible task; to permit it to fail in its work at such times may prove more disastrous to the world's future welfare than an equally serious disaster to the organization and morale of the armies in the field. A notable illustration of this fact is furnished by Russia under the rule of the Bolsheviki. Even when supporting her mighty army in the field, so long as her commercial and industrial life was operating in a systematic way, the suffering occasioned by the war was relatively insignificant beside that which her unhappy people have endured or that which is yet in store for them before normal economic conditions can be restored.

EXTENSIVE CREDIT GRANTED

When the war broke out, the United States of America was fairly prosperous, altho even then the somewhat rapid increase in prices, a movement beginning as far back as 1897, had promoted a speculative development of industry and an over-extension of credit that was always, like the sword of Damocles, threatening to do its perfect work. The predicted disaster was, by the exercise of prudence and discretion on the part of the rank and file of our business leaders, prevented or deferred until suddenly, almost out of a clear sky, the bolt came. War was declared and for a moment the commercial world was in chaos. In an instant it recovered its composure and protective measures came fast. Immediately the exchanges were closed to prevent spasmodic as well as concerted movements to dump immense quantities of high grade securities upon the market at a time when the purchasers of securities were unprepared to absorb them except in driblets. Time was thus secured and in this case time was of the essence, for the great flood of securities poured out by Germany was thus diverted into many channels and spread over a considerable period of time.

No Time to Hem and Haw—Buy Liberty Bonds to the Limit.

CONSUMPTION GREATER THAN PRODUCTION

This disaster averted, others less easy to deal with presented themselves. In the first place, in view of the enormous forces withdrawn from the ordinary pursuits of a normally organized industrial society, the world awoke to find itself consuming food and other necessities of life faster than it was producing such commodities. Prices of food then began to soar to new high levels. A higher cost of food meant a forced and automatic reduction in real wages and the working men began to demand and to obtain more money wages. More wages meant a higher cost of production, and as a necessary result, less profits or higher prices, and so on until wages and prices should be restored to the normal relationship. In the second place, war called for new equipment of all sorts, arms, munitions, camps, clothing, and other articles which an army must have and which it consumes with almost superhuman avidity. To furnish the equipment for warfare requires the services of a large number of the business enterprises and the capital and labor regularly employed by such organizations cannot be used in producing goods necessary for the support of the civil population.

Prices thus naturally rise in all lines of production where the goods or services in question are required for the successful prosecution of the war—in the necessities of living, because the withdrawal of capital and labor must be diverted from its normal uses in order that it may be devoted to providing the tools of warfare. Just as the struggle for goods causes a rise in prices, so the struggle for the use of capital and labor causes a rise in the rate of interest and in the rate of wages. The normal and necessary effect of a war is thus rapidly rising prices in lines of production necessary for the prosecution of the war, and falling prices in other lines. With this movement, there is directly connected rising interest rates and rising wages, the two movements proceeding more slowly but affecting all industries in the same general way. The non-essential industries are thus badly pinched—first because the prices of the goods are certain to fall unless production is cut radically; second, interest is certain to rise; and third, wages are also increasing.

LOANS AND TAXATION

In the time of war, however, prices, wages and the cost of living are quite generally thrown out of equilibrium by the introduction of certain other factors which while not absolutely necessary to its conduct, are generally resorted to by most governments. It is, of course, evident that the real costs of any war must be borne by those living during its progress, except so far as their predecessors may have furnished a part of the fortifications, equipment, food, arms, etc., which are destroyed in its course. But under our present form of society, the government pays its army and navy, purchases their food and equipment and employs a large force of civilians in the various necessary occupations incident to the conduct of the war. To secure funds to pay for goods and services it may borrow, or tax, or borrow and tax. To what extent a government, while at war, may wisely rely upon taxation to provide funds sufficient to pay the expenses of the war is always a delicate question and one on which opinion is divided. This much may be said with entire confidence, governments err by relying too much upon loans rather than too much upon taxes. The immediate result of resorting to loans is an extension of credit, because many subscribers to the government bonds borrow from the banks, pledging the bonds purchased or other property as security for the loans. At the same time the banks themselves patriotically subscribe to the loan and these two transactions, borrowing from the banks and investments by the banks increase the volume of bank notes and of deposits and thus indirectly government borrowing is a powerful factor in causing the general level of prices to rise.

INCREASED REVENUE THRU TAXATION

In the use of credit financing, Germany has proved herself to be an adept disciple of John Law, and all of the other countries have relied too much upon loans. Fortunately England and the United States have each proved themselves skillful in devising ways and means for increasing the revenue of the government by taxation and thus preventing a part of the rise in prices that otherwise would have occurred. The English government, in common with the others, has been embarrassed in its conduct of the war by the problems thus presented for solution and in accordance with the customary way of solving such questions, appointed a committee of the House of Commons to investigate and report. During the month of December last, the committee reported as follows:

"The latest statistics show that 16 articles of the former (consumables) have recorded an average increase of 105 per cent. and the suggested rise of 10 per cent. in wages is not over stating the case. But whatever the extent, the committee has no doubt that the chief causes are the expansions of credits during the war, the demand for commodities exceeding the supply and the inadequacy of government action to control prices, increases of wages and consequent increase in the cost of production, increases in the rates of profit, and unfavorable rate of exchange in some countries from which the supplies are imported."

COUNTRY HAS VAST STOCK OF GOLD

In the list of causes responsible for the rapidly rising price level, the inflation of credits is given first place, while the scarcity of commodities due to the withdrawal of labor and capital for purposes of war service is relegated to a subordinate one. One other aspect of the question should be noticed. At the outbreak of the war there was in this country somewhat less than two billions of gold.* Immediately thereafter gold began to pour into the country at an unprecedented rate in payment for munitions, food, equipment and other articles of trade and commerce sent to the warring nations. On the first of January, 1917, the total stock of gold in the United States had mounted to $2,864,800,000—while on January 1, 1918, it was slightly over three billions.¶ And since President Wilson on September 10, 1917, gave an order that no gold should be exported without permission from the government, it is probable that the vast stock of gold will be held in this country during the continuance of the war.

We have thus three great factors operating to force prices upward, first a relative shortage of goods; second, an inflation of credit; and third, a rapid increase in the stock of gold. The first of these factors affects the various lines of goods with varying force, and consequently some lines rise rapidly, others remain stationary, while others fall. The second and third factors affect the price of all commodities in the same way, causing the general price level to rise.

UNIFORM RATE OF INCREASE

With few exceptions, every important line of commodities has been increasing in price since 1897. The rate of increase has been fairly uniform up to the year 1916, when prices began to rise by leaps and bounds. Taking the record of wholesale prices as kept by the United States Bureau of Labor, Bradstreet's, and the London Statist, the rise is as follows:

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*$1,880,167,000, January 1, 1913.

¶$3,040,500,000.

Year	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Bureau of Labor	69	69	77	69	72	76	74	79	81	77	82	81	80	81	100	142
Bradstreet's	....	....	70	72	75	75	72	76	77	76	80	81	79	86	104	137
Statist	....	....	....	72	77	80	73	74	78	80	85	85	85	108	137	174

Taking the figures of the United States Bureau of Labor, the changes may be shown for nine principal classes of commodities as follows:

Year	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17
Farm Products	66	62	66	63	64	70	69	70	84	76	82	82	85	83	100	154
Food and Provisions	67	64	68	68	66	70	74	78	79	78	85	79	81	83	100	140
Cloths and Clothing	66	70	70	72	77	82	74	78	79	76	78	79	78	78	100	143
Fuel and Lighting	80	92	79	75	78	81	78	76	72	70	77	87	80	75	100	147
Metals & Metal Prod'ts	66	65	60	66	76	81	63	62	63	60	67	67	59	65	110	140
Lumber & Bldg. Materials	76	79	80	84	93	96	91	96	100	100	98	99	96	93	100	123
Drugs and Chemicals	68	67	68	67	66	67	70	71	72	72	71	70	72	80	100	130
House Furnishings	112	111	106	99	99	99	95	96	94	90	90	91	94	92	100	141
Miscellan's	76	78	78	78	80	84	80	90	96	86	84	83	81	81	100	127
All Commodities	69	69	70	69	72	76	74	79	81	77	82	81	80	81	100	142

It will be noted that prices for all of the nine classes of commodities were higher in 1917 than in any preceding year of the period and that with the exception of house furnishings, all groups were as high or higher in 1916 than ever before. To show the changes in the several classes for selected periods a further table may be arranged as follows:

	Increase in General Level of Price for Selected Periods.		
	1916-1917 Per Cent.	1913-1917 Per Cent.	1902-1917 Per Cent.
Farm Products	54	86	133
Fuel and Lighting	47	70	84
Cloths and Clothing	43	81	117
House Furnishings	41	55	26
Food Products	40	77	109
Metals and Metal Products	40	108	112
Drugs and Chemicals	30	86	91
Miscellaneous	27	53	67
Lumber and Building Materials	23	24	62
All Commodities	42	75	106

Bradstreet's index number showing changes in the general level of prices follows very closely that of the Bureau of Labor. The two authorities, however, group the various commodities so differently that it is impossible to make a direct comparison of the changes of the prices of the several groups. Using Bradstreet's classification, the several main classes of commodities show the following changes for January 1, 1917 to January 1, 1918:

	Per Cent.
Oils, increase	73.5
Miscellaneous,† increase	62
Textiles, increase	45
Fruits, increase	38
Metals, increase	37
Breadstuffs, increase	36
Drugs and Chemicals, increase	35
Provisions and Groceries, increase	34
Building Materials, increase	30
Live Stock, increase	22
Naval Stores, decrease	10
Hides and Leathers, decrease	11
Coal and Coke, decrease	17

When a change in the price level occurs, wage earners as well as owners of business enterprises are immediately, if not directly affected thereby. When the price level falls the wage earners as a class are usually benefited, because their wages will then purchase more goods. When the price level rises wage earners are harmed, since the wages will purchase less. In either case the condition is a temporary one, since a change in the price level of goods causes a change in the general level of wages, wages rising or falling as the case may be until an equilibrium is restored by the new adjustment. Changes in the wage scale generally follow rather then precede changes in the price level of goods and moreover generally move more slowly, the employer resisting advances and the employes resisting reductions when a change in the various relationships occur.

WAGE SCALE MORE STABLE THAN PRICES

Wages are thus more stable than either prices or profits, a condition that is desirable since the average wage earner's family would suffer more from a sharp fall in wages following a fall in prices than they would gain from a rapid rise in wages following an advance in the price level. Whether the adjustment is made promptly and accurately or the reverse, wages are always to be viewed from the standpoint of what they will purchase, that is, money wages must be translated into real wages. To determine real wages it becomes necessary to determine what lines of expenditure absorb the working man's wages and what proportion he normally devotes to each. This question has been a favorite occupation of students of our present economic system, some approaching it in a scientific spirit, others as propagandists of a new social order. The most comprehensive investigation is nearly fifteen years old, having been made by the United States Commission of Labor in 1903. It included a study of the budgets of 25,440 families, living in 33 states, no one of which families had an annual income of over $1,200.

INCOME DISTRIBUTION

According to this report the normal distribution of the income of families expending on the average $768.54 per year was as follows:

	Per Cent
Food	42.54
Clothing	14.04
Rent	12.95
Miscellaneous	5.87
Fuel	4.19
Life Insurance and Payments on Mortgages	3.59
Furniture	3.42
Liquor and Tobacco	3.04
Books and Amusements	2.69
Sickness and Deaths	2.67
Taxes, Interest on Mortgages and Property Insurance	1.47
Lighting	1.06
Club and Lodge Dues	.67
Labor Union Dues	.50
Charity	.31
Total	100.00

A later investigation by the Federal Government classifies expenditures somewhat differently and shows that for families of five, living in Massachusetts, and expending $744 per year the apportionment was as follows:‡

	Per Week	Per Year	Per Cent of Year's Expenses
Food	6.02	313.00	42.05
Housing	2.52	131.00	17.60
Clothing	2.63	136.80	18.40
Fuel and Light	.82	42.75	5.74
Health	.22	11.65	1.43
Insurance	.35	18.25	2.45
Sundries	1.75	90.90	12.21
	$14.31	$744.35	99.88

Liberty Bonds or Kaiserism—Which?

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†Includes rubber, tobacco, newsprint paper, ground bone, hay, cotton seed and hops.

‡Women and Child Wage-Earners in the United States. Sec. Doc. 645, 61 Cong. 2nd Session.

WAGE SCALES

Even if we have accurate statistics showing the apportionment of a working man's expenditure under normal conditions, the problem of comparing real wages from year to year is not yet solved. We must then have equally accurate statistics in regard to money wages extending over wide areas and over the years which we wish to compare. Such statistics do not exist in this country and the best we can do is to compare such as we have, with the hope that our existing wage statistics are typical of the whole situation. Such data as we have is, of course, limited to wage earners working under the union scale, that is a scale based upon an understanding or written agreement between an organization of union men and an employer or a group of employers. Such scales usually provide for a minimum wage per hour and a maximum number of hours per day. Provisions are, of course, made for overtime work and consequently a small portion of the men working under a union scale receive more than the regular scale specifies. For example, in the machinists trade for the year 1916, 71.2 per cent. of the men working received the wage scale agreed upon, 28.2 per cent. received more than the scale, while .6 per cent. received less. In the railway shops, 89.5 per cent. received the union scale, 10.3 per cent. received more than the scale, while only .2 per cent. received less. Generally speaking, somewhat over 10 per cent. of the men working under the union scale receive more wages than an exact observation of minimum wages and maximum hours would call for.

The Bureau of Labor of the Federal Government operates a section whose function is to obtain data in regard to the union scale of wages in various industries and in order that the results of its work may have as wide publicity as possible, it publishes a series of volumes at irregular intervals under the title "Wages and Hours of Labor." In the issue of May 15, 1916, the results of an investigation of 101 separate trades in ten different industries* was published from which the following data has been secured. This table shows the changes in wages per hour, per week and in the retail prices of food:

RISE IN WAGE UNEQUAL

The working man in the trades investigated and reported, has, it will be noted, been losing in real wages when his wages are converted into food, or into any other article which has increased in price during the past few years faster than his wages have risen. As might be expected, wages in the various industries and various trades have risen unequally—some trades advancing as much as 28 per cent. during the ten-year period, others only 6 per cent. Arranged by groups according to the percentage of increase during ten years, the results are as follows:

Index Numbers of Union Wage Rates and Hours of Labor and Retail Prices of Food

Year	Rates of Wages per Hour	Full Time Hours per Week	Rates of Wages per Week Full Time	Retail Prices of Food	Purchasing Power of Hour's Work in Food	Purchasing Power of Week's Wages in Food
1907	84	104	86	72	116	120
1908	85	103	87	74	114	117
1909	86	103	88	78	110	113
1910	88	102	90	82	108	110
1911	90	102	91	81	111	112
1912	91	101	92	86	106	107
1913	93	101	94	88	106	107
1914	95	101	96	90	106	106
1915	96	101	96	89	107	108
1916	100	100	100	100	100	100

Group 1. Trades showing an increase of over 25 per cent. in rates of wages per week, 1907-1916.

	Per Cent.
Electrotypers, battery men and builders	28
Painters	28
Blacksmith's helpers	27
Core makers	27
Steam fitter's helpers	25

Group 2. Trades showing an increase of 20-24 per cent. in rates of wages per week, 1907-1916.

	Per Cent.
Bakers	23
Sheet metal workers	22
Machinists	22
Boiler maker's helpers	20
Cement workers—laborers	20
Steam fitters	20

Group 3. Trades showing an increase of 15-19 per cent. in rates of wages per week, 1907-1916

	Per Cent.
Electrotypers, finishers and molders	19
Molders, iron	19
Pattern makers, wood	19
Boiler makers	18
Pressmen—cylinder	18
Inside wire men	18
Stereotypers, day work	16
Cement workers, finisher's helpers	16
Structural iron workers	15
Blacksmiths	15

For the remaining eighty trades, either the data is incomplete or the increase in the union scale is less than 15 per cent. In those trades where the data regarding the union scale is incomplete it may be said that such information as the bureau has been able to collect indicates that the rise in the scale has been fairly uniform with the movement in those where the record is complete.

Comparing the general rise in prices as shown by the index number calculated by the Bureau of Labor, Bradstreet's and the Statist, with the index number showing the rise in the union scale, it appears that:

First, prices of commodities have, during the past ten years, 1907-1917 inclusive, risen approximately thirty-two per cent.

Second, the union wage scale in the reported trades has risen nineteen per cent. in wages per hour, but as a result of the shortening of the working day only sixteen per cent. in wages per week.

WORKERS' WAGES ADVANCED ELEVEN PER CENT.

As a result of the habitual lagging of the wage scale, the real wages of the working man has actually been decreasing at somewhat over one per cent. per annum. What has been happening during the year 1917 is known in a general way but the data is not present in sufficient quantity and quality to make comparisons of general significance. That commodity prices have taken the biggest jump since 1863-4 is certain. During the year wages also have rapidly advanced, the actual increase being in some cases as much as fifty per cent. Generally, however, the rate of increase is much less than that mentioned as an extreme case. The report of the Industrial Commission of the state of New York shows that wages of factory workers advanced during the year 1917 only 11 per cent.

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* 1. Baking Trades	1 trade
1. Baking Trades	1 trade
2. Brewing and Bottling House Workers	17 trades
3. Building Trades	37 trades
4. Chauffeurs and Teamsters	3 trades
5. Freight Handlers	1 trade
6. Granite and Stone Cutters	2 trades
7. Metal Trades	10 trades
8. Millwork	2 trades
9. Printing and Publishing	25 trades
10. Soft Drink Manufacturers	3 trades

Go "Over the Top"—Buy a Bond Today.

while the mayor of Philadelphia's Food Commission reported recently that wages in that city increased for the same period 16 per cent.

We have thus far noticed that prices of commodities have been rising steadily since 1897 and that since the outbreak of the war the rise has been extremely rapid and also extremely unequal in various lines. Wages have risen as steadily but more slowly and more evenly. As a result, some industries are abnormally profitable while others are feeling the pressure of rising wages without at the same time being able to advance prices except at the sacrifice of a part of their normal production. The natural and indeed the inevitable consequence of this general movement is a demoralized industrial organization—demoralized at a time when the needs of the nation require the maximum production of those things which are necessary for success in war. What then is the duty of the business man whose hand is at the throttle of the several business enterprises which make up the industrial machine?

MANUFACTURE ONLY ESSENTIALS

The first duty of the business man is to devote his capital and labor force so far as possible to the production of those commodities the price of which the demands of war has caused to rise abnormally fast. The automobile manufacturer should turn his factory so far as possible into a manufactory for airplanes, motor trucks, munitions. The manufacturer of clothing should cut out fancy weaves and fancy goods of all kinds and produce more of the staples. The manufacturers of nonessentials should drastically limit their production in order that their energies may be devoted to the production of goods which are necessary in times of war.

The second duty of the business man is to make a scientific study of wages and adopt some such plan as that said to have been put in force by the Oneida Community, Limited, the Solvay Process Co. of Detroit, and the Franklin Automobile Co. of Syracuse, each of which adjusts wages monthly on the basis of changes in the price level as shown by Bradstreet's index number.

The third duty of the business man is to support the legitimate policies of his association to the end that, without in any way incuring the penalties of the Sherman Act, he may in co-operation with his fellows in the same business adopt and follow some rational basis for figuring prices and adjusting wages. The work of the employers' associations in connection with the formation of the protocol in the cloak and suit trade in New York city may be cited as a notable example of right methods of determining wages.

In the fourth place, the business man ought to be the foremost advocate of more taxes and less government loans for the purpose of paying for the legitimate costs of the war. Such a policy has two effects both desirable in themselves: 1st, it prevents inflation, a rapid rise in prices and thus tends to preserve in a state of the highest efficiency our industrial organization; 2nd, it also by taxing those who are making abnormal profits out of the war, places the real burden upon those who ought to bear its costs rather than transferring a big debt to the next generation which will in all probability have enough burdens of its own creation to bear.

FIVE GOOD RULES TO FOLLOW

As a general proposition, the conclusion of the British House of Commons seems to me to be more than usually wise, so wise that I am using it as a closing sentiment:

"1. Whatever measures are possible should be taken by the government to avoid the creation of new credits in financing the war.

"2. An inquiry should be set on foot to ascertain what has been the actual increase in the cost of living to the working classes and how far it has been counter-balanced by advantages apart from wages due to war conditions.

"3. The measures for the limitation of profits should be continued and strengthened, and should be made widely known to the people.

"4. The strongest case should be required to be established before any advance of wages is conceded on any ground other than the rise in the cost of living. Nor should it be regarded as a rule—and we have no reason to think that labor in general desires that it should—that wage earners in receipt of not inadequate pay before the war should be exempted from all share in the economic sacrifices involved in a state of war.

"5. A single policy under the general direction of one authority should be adopted in all industries in the determination of the wage question."

⁂

A. P. Green Fire Brick Co. Publishes Plant Newspaper

"The Brick Plant News" is the name of the newest brick plant paper. It is being published twice a month (the second and fourth Saturday) by the employes of the A. P. Green Brick Co., Mexico, Mo., Volume I, No. 1 being dated February 16, 1918.

The object of this little semi-monthly newspaper is to bring the company and its employes into a closer relationship and to create a larger feeling of good fellowship among the workers. Five hundred copies of the first issue were distributed free among the workers on the plant and it is the intention of the company to continue publishing two issues each month as long as the employes will work together in sending in material of interest to fill the pages.

It is the aim of the advertising department of the A. P. Green Fire Brick Co., which is editing and publishing this newspaper, to have "the best plant paper in the country as well as the best fire brick." About ninety per cent. of the news will be "funny stuff" and the other ten per cent. serious matter. The first issue of the paper was filled with interesting and humorous material about the men on the plant, and also contained the honor roll of the company, which has a service flag bearing twenty stars, representing twenty of the company's employes who are now in the service of their country.

The second and third numbers of "The Brick Plant News" have also come to hand and these are equally as interesting as the first issue. Several amateur artists have been "unearthed" on the plant and it is the intention of the editors to produce in future numbers, drawings from their pens. News of the base ball team is given in the current issue of the newspaper, as well as the plans for the formation of a welfare association among the employes of the Green company. A report is also given of the work being done by the men in the selling of war savings stamps.

The editors of this new newspaper will be glad to place the name of other brick plant papers on their exchange list, if these editors will communicate with the A. P. Green Fire Brick Co.

⁂

The rebuilding of the Kenilworth Tile Co.'s plant at East Liverpool, Ohio, which was almost totally destroyed by fire about six weeks ago, has been started. The plant will again be in operation by May 1.

The Brick House Shown Above is Merely a Suggestion of What Might be Built at Washington. This Home Happens to be the One Built by the Panama-Pacific Clay Products Association at the Panama-Pacific International Exposition, Held in the Early Part of 1915, at San Francisco. If You Have Anything Better to Suggest By Way of Design, or in Color or Texture of Brick, Please Let Us Hear From You. Your Thoughts Along This Line May be More Valuable Than You Think.

YOU CAN MAKE *this* VISION *a* REALITY

By Lending Your Moral and Financial Support to the Idea that a Brick House Should be Built at Washington, D. C., to House the Secretary of the American Face Brick Association or Other Clay Products Associations, and Be a National Advertisement of Brick as the Logical Building Material To Use in the Present Crisis

SINCE THE APPEARANCE, in the March 26 issue of *Brick and Clay Record,* of the suggestion made by Wm. H. Gifford, manager, brick department, Wisconsin Lime & Cement Co., Chicago, that a brick house be built at Washington for the headquartes of the American Face Brick Association, and perhaps other branches of the clay products industry, a number of manufacturers have written, expressing their approval of the idea. Since we believe the words of our readers are far more eloquent on any subject of importance than any which the writer can formulate, we wish to present extracts from some of the letters which have been received touching upon this suggestion.

CAN BE GREAT YEAR FOR BRICK

"Every brick man," says Herman L. Matz, of the S. S. Kimball Brick Co., Chicago, "should be interested in your issue of March 26, and especially in the article containing Mr. Gifford's timely suggestion of erecting a brick house at Washington for the permanent representative of the brick interests of the country during the period of the war. I hope this suggestion will be acted upon by the national brick organizations competent and able to handle the matter.

"This can be made a great year for brick if we unitedly offer the Government in a patriotic and intelligent way the resources we represent. We must be organized like an army and have a leader at the front."

A SPLENDID IDEA

"I think this is a splendid idea," writes W. H. Brecht, of the Boone Brick, Tile and Paving Co., Boone, Iowa, also a director of the America Face Brick Association. "The Iowa division of the Association will hold its regular monthly meeting on Thursday, April 11, and I am going to get an expression from the members in attendance, on this proposition. Will let you hear from me further after this meeting."

HOUSE SHOULD BE MORE ATTRACTIVE

The following from C. F. Miller, of the Darlington Brick & Mining Co., Darlington, Pa.: "I believe the idea is a good one, provided a proper location can be obtained, and as I come in contact with the different manufacturers in the

Every Liberty Bond Bought Brings Kaiserism's End That Much Nearer.

Association, I shall be glad to take this matter up with them. I sincerely hope, however that if the A. F. B. A. builds a house at Washington for the secretary, it will be a more attractive one from the writer's viewpoint, than the one published in the March 26 issue of *Brick and Clay Record.* I assure you that I fully approve of your suggestion and hope that it may be carried out."

CANNOT LOSE ON PROPOSITION

"We believe that your suggestion is a good one and if put into effect would co-operate," writes J. B. Wilcox, of the Alliance Clay Products Co., Alliance, Ohio. "We do not see how there can be any money lost on the proposition."

CLAY INDUSTRY

Eben Rodgers, of the Alton Brick Co., Alton, Ill., says, "It seems to us that the face brick business is of so little importance to the war that anything these manufacturers should undertake alone would not be of much profit to other branches of the clay products industry, which are important in the war work but if it were possible to combine the clay industry and erect a substantial building where proper representatives could have their headquarters, we think this would be a profitable move. The matter of getting the various branches of the clayworking industry together on this or any other proposition is something we are unable to solve."

DON'T LET "GEORGE" DO IT

The above comments are certainly very much appreciated and indicate that the idea, at least, is a good one. Men who write such letters are usually of the type always to be found with their shoulders to the wheel whenever a good suggestion for the welfare of the industry is advanced.

However, there is a vast army of manufacturers who would prefer to let "George" do not only the talking for them but also the subscribing to any fund that may be proposed.

SPEND MONEY TO MAKE MONEY

It is good business to spend money in order to make money. Show us the man who is not investing something with a view toward increasing his returns in the near or not too distant future, and we will show you a man whose business is decaying of dry rot. When you hire a salesman you invest a certain amount of money in him. He does not usually produce for you "right off the bat," and costs you some money before he really begins to "bring home the bacon."

You may be one of the few progressive manufacturers who invest a little money annually in advertising. If you do, you know that you cannot expect returns the minute your message has been released to the public. You *know* that you must keep *hammering* away on your proposition consistently and persistently until returns begin to come.

BEST KIND OF ADVERTISING

The erection of a brick house at Washington to serve as headquarters for the brick associations would be one of the best pieces of advertising that could possibly be done by the manufacturers of that commodity, and you must be willing, if you favor the idea, to contribute something in the way of an investment that will bring future returns.

Nearly every one, outside of the industry, of any importance in national affairs, to whom you talk in these days, says that the clay products manufacturer has one of the best propositions in the manufacture and sale of his ware in the United States. Developments are lining up against the competitors of clay, particularly lumber. It is noteworthy that one of the most important subjects to be discussed at the sixth annual meeting of the United States Chamber of Commerce, to be held on April 10, 11, and 12, at the Auditorium is "Ships and Shipping." The construction of ships means the consumption of lumber and the utilization of carpenter labor. The building of much needed freight cars has the same significance. It is good business to use lumber and carpenter labor for these purposes but it is questionable as to the wisdom of using the same commodities for necessary building operations, when doing so would mean interference with the national emergency program.

HOUR ABOUT TO STRIKE

We believe that the hour of clay's opportunity is about to strike. It is up to the clay products manufacturer to be up and doing as he hears the footsteps of opportunity at his door. We hope that she will not find him sleeping.

A Suggestion

¶ *In view of the contemplated removal of the American Face Brick Association's office to Washington, D. C., for the period of the war, a brick house should be erected as an advertisement to the whole nation that brick is the logical material with which to build in the present war crisis because of the necessity for conserving lumber and carpenter labor for shipbuilding; eliminating some of the railroad traffic due to the hauling of lumber long distances, and also because of the crying need for cutting down the annual fire loss this year as a measure of war economy.*

What Do You Think About It?

There are more men in the clay products industry than those who have already written, who have their own ideas about the plan which has been suggested, namely the building of a brick house at Washington for headquarters of the various brick associations during the war as a monument to the importance of clay products in the present world crisis. *Men, let us hear from you!* It takes only a minute to write a letter and it costs only three cents to mail it. *Your encouraging words or helpful criticism may be the means of putting new life into the proposed movement.*

NOTE, PLEASE

In closing, it is desired to make a correction. In the March 26 issue of *Brick and Clay Record,* on page 596, it was stated that "if it were decided to remove the headquarters of the American Face Brick Association secretary from Washington, after the war, the house could easily be sold and the money turned back to the donors. A well-built brick house is a readily saleable article." It would seem to be a better plan that, if the house were sold, the money might be turned over to the proper authorities to serve as a nucleus of, or an addition to, a fund to be used in advertising the merits of building brick.

Remember, if you are going to write the Editor of Brick and Clay Record, DO IT NOW!

"Dad, I'm Going Across—You Buy Liberty Bonds."

COAL CONCESSIONS *for* EASTERN PRODUCERS

VAST ALTERATION PROGRAMS, sufficient to keep all available local building labor at work and to strain the resources of many small building contractors in executing rush war work is soon to get underway in New York City when the Federal authorities complete their survey of three, four and five-story and basement buildings in certain locations in the five boroughs that are to be taken over for use as storage warehouses as a part of the plan to insure an unending chain of shipments of food, winter clothing and other equipment for the soldiers of the American army across the seas, according to The Dow Service Daily Building Reports.

This survey, which has been in charge of officers of the army and navy departments, is practically completed. The sections where the virtual commandeering of houses will take place are not announced for publication for obvious reasons, but it is expected that announcement will be made from Washington within the near future that approximately five hundred such buildings have been or will be taken over. The plan originally was to build large terminal warehouses for the accommodation of winter supplies for the army and navy, but the scarcity of building materials and lack of labor combined to force the authorities to take the quicker method of meeting the problem which had to be forced at once so as to help clear the railways. The plan is, in many instances, to rip out certain floors in these buildings and to install hoists and chutes for quickly handling goods and the majority of the structures affected will be inside the half mile restricted zone of both rivers in Manhattan and Bronx. In Brooklyn there is some question as to how extensive the movement will develop, but the Bay Ridge section is likely to be one of the districts most affected in that borough. Queens has been visited and also Richmond, where, however, it was found that there were few structures available for such purposes. This action is almost sure to result in the absorption of all available business and some housing space in Manhattan, Bronx and Brooklyn and is expected to result in some concession being made to eastern manufacturers in the matter of obtaining coal for building material production this summer.

COAL SHIPMENTS GREATLY IMPROVED

Already there has been a decided improvement in the coal shipping situation to building material plants. Some of the plants manufacturing Portland cement in the Hudson and Lehigh districts have received intimations this week that shipments will be coming their way by the end of this week. One interesting feature in this connection is that since the world war began potash has been exceedingly scarce in this country until it was noticed that the vegetation surrounding cement plants all over the country was greener and more healthy than in other sections of the same communities. Investigation proved that out of the dust in the smoke stacks of cement mills important potash deposits were found. This discovery has prompted the fuel administration at Washington to view with consideration the threatened shutdown of these plants from under supply of coal.

The strike of the bricklayers' helpers came to a settlement last week with a new wage scale of 47½ cents an hour until July 1 and 50 cents an hour after that date for the remainder of the year. The settling of this strike and the simultaneous arrival of thirteen barges in the market on April 6 brought the price of Hudson common brick down to $9.50 a thousand, with quotations decidedly weak at that level. Some of the better grades of brick are still quoted at $10.00 a thousand, wholesale.

Plaster blocks, as indicated a fortnight ago, advanced in price. Two inch furring advanced half a cent to 6½ cents: two inch block, solid, advanced 2½ cents, quoted, 9½ cents; three inch hollow block, same; and four inch hollow block, 11 cents, an advance of two cents.

LUMBER PRICES ADVANCING

Several price changes are reported in the current wholesale price lists for April. Red cedar, 6 inch, is up $1, quoted $32.50; A is up $1, quoted $3, and B is up $1 quoted $24.50. In the interior wood department few changes have taken place with these exceptions: Ash is up $5, quoted $75 and $80; basswood is up $9.50, quoted $64.50; cypress $2, quoted $65.00; hemlock $3, quoted $33.50; Virginia base $3, quoted $33.50; poplar $5, quoted $68.50; spruce $2, in all sizes mill run, culls out; No. 1 clear $5.50 and $7, quoted $60.50 and $65.00.

Experiments are under way in the cement industry to copy the German plan of manufacturing high powered shells out of concrete. Tests show that the American product lends itself to this new application of this material as a war munition factor and a plan is now being worked out to perfect a new system of forming the shells under heavy pressure, coating them with a thin veneer of metal so as to permit the shell rim to follow the rifling of the high powered guns, so that to all intents and purposes the finished shell is of solid steel, but in reality is formed largely of concrete as a covering for high explosives. The Portland Cement Association recently sent its local representative to California to study the construction methods of concrete shipbuilding and there is in contemplation a plan to bring together all the concrete engineering profession in this vicinity for the purpose of establishing and perfecting the concrete shipbuilding industry in this harbor.

* * *

Gas Shortage Causes Deficit in Brick

Brick manufacturers of Oklahoma have experienced considerable trouble on account of the gas shortage, but believe that if there is no further cold weather their troubles on account of gas shortage will be over and there will be no necessity of a shut-down.

T. R. Steele, manager of the Lumbermen's Supply Co., Wichita, Kans., stated that the gas shortage this winter was responsible for a deficit of ten million brick in the average total. All plants, he said, were from forty to sixty days behind with their orders.

R. L. Byram, manager of the Kansas Buff Brick & Manufacturing Co., Buffville, Kans., said there had been no trouble in Oklahoma City itself, but in the company's plants at Sapulpa, Cleveland, Claremore and Blackwell, the capacity had been cut to seventy-five per cent. of normal. A great deal of delay had resulted from the lack of fuel, he said, but agreed with Mr. Steele that the trouble is not permanent.

A. W. Kenyon, manager of the American Brick & Tile Co., Oklahoma City, said his plant expected to get relief from the warmer weather, and he believed that the only solution of the difficulty.

* * *

The Bradford (Pa.) Pressed Brick Co. has purchased the stock of grey and buff brick on hand at the plant of the Kittanning Clay Products Co., Cowanshannoc, Pa., consisting of from two to three million brick, and would be glad to hear from any jobbers who are in the market for this class of material.

Invest in a Liberty Bond Today.

CURRENT LEGAL DECISIONS
AFFECTING BUSINESS

It is the Purpose of This Department to Serve to the Manufacturer of Clay Products a Brief Digest of Decisions Which Have Been Handed Down in the Courts During the Month, Enabling Him to Keep in Close Touch With Legal Developments

DECLARING DIVIDENDS

A corporation cannot declare dividends unless earned—92 S. E. (Va.), 818.

GUARANTOR OF NOTE

A party, signing a note upon its back before delivery to the payee, is a guarantor.—165 P. (Cal.), 692.

STATUTE OF LIMITATIONS

The statute of limitations applies with full force to the most meritorious of claims.—195 S. W. (Ark.), 676.

SUITS AGAINST A STATE

A state can be sued by a citizen only upon such terms as it is pleased to prescribe.—92 S. E. (Va.), 804.

OVERDUE INTEREST AS WARNING TO INDORSEE

That interest on a note was overdue does not constitute notice of dishonor to an indorsee.—163 N. W. (Iowa), 247.

EVADING USURY STATUTE

There is no device or disguise which will validate a contract resting on an intent to evade the usury statute.—100 A. (Conn.), 1067.

LIFE INSURANCE

Contracts of life insurance are construed most strongly against the company which chooses the language employed in the contract.—195 S. W. (Ark), 691.

THIRD PERSON'S DEALS WITH AGENT

A third person dealing with an agent is bound at his peril to ascertain the fact of agency and extent of agent's authority.—195 S. W. (Tex.), 922.

LIABILITY OF BAILEE

An agent or bailee acting without compensation and solely for the accommodation of the principal or bailor is liable only for gross neglect.—92 S. E. (Va.), 837.

CONSTRUCTION OF CONTRACT BY PARTIES

Where a contract is uncertain or indefinite, regard should be given to the principal construction put upon it by the parties.—116 N. E. (Mass.), 530.

INSURANCE APPLICATION CREATES NO RIGHTS

A party cannot recover judgment against an insurance company on a mere application for an insurance contract.—163 N. W. (N. D.), 263.

WHAT CONSTITUTES A "DEPOSITOR"

A "depositor" is one who delivers to or leaves with a bank money subject to his order, either upon time deposit or subject to check.—163 N. W. (Nebr.), 318.

DESCENT OF HOMESTEAD

Upon the death of the head of a family residing in this state, his interest in the homestead property descends to his heirs free from any liability for his debts.—75 So. (Fla.), 614.

LIABILITY FOR FREIGHT CHARGES

Where a consignee refuses to pay transportation charges, an interstate carrier may look to the shipper, and is not required to sue the consignee.—241 F. (U. S.), 728.

RETROACTIVE STATUTE

A law should never be given a retroactive effect, except where its express language so indicates, but should, whenever reasonably possible, be given a prospective operation.—165 N. Y. S., 792.

STOCK SUBSCRIPTIONS

Ordinarily an unconditional stock subscription is a continuing offer until the proposed corporation is formed, and until that time may be withdrawn at the subscriber's option.—165 P. (Mont.), 792.

LIABILITY OF KNOWN AGENT

Where a person is known to be contracting as an agent of another, who is known to be the principal, such contract does not bind him personally, but binds the principal only.—116 N. E. (Ind.), 577.

NOTES PAYABLE AT BANK

That notes by their terms were made payable at the payee bank did not make such bank the collecting agent of a bank to which they were indorsed and transferred before maturity.—241 F. (U. S.), 631.

RESALE BY SELLER ON BUYER'S REJECTION

Where goods are rejected by the buyer as not being up to sample, and they are resold by the seller, the buyer is not entitled to notice of the time and place of sale.—92 S. E. (Va.), 827.

DIAMOND RING NOT EXEMPT IN BANKRUPTCY

A diamond ring, worn by the bankrupt and worth $650, was not exempt in bankruptcy, in the absence of any statute or authoritative ruling of the state court supporting the claim of exemption.—241 F. (U. S.), 673.

BREACHED SALES CONTRACT

Where defendant buyers breached a sales contract by failing to give shipping instructions, plaintiff seller may recover

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damages for such breach without tendering the goods.—195 S. W. (Tex.), 900.

CONSTRUING CONTRACT OF SALE

In construing a contract of sale, the whole agreement is to be considered, and not merely one clause of it, in the light of prevailing conditions and circumstances within parties' contemplation at the time of execution.—165 P. (Ore.), 579.

INDEBTEDNESS OF CITY

Where an indebtedness against a city was valid when incurred, a subsequent exhaustion of funds from which it could be paid only affects the remedy to obtain payment, and does not prevent a judgment being secured for the amount due.—165 P. (Cal.), 698.

COLLECTION OF COLLATERAL—NEGLECT

The holder of collateral to secure another debt must exercise ordinary diligence to collect the collateral, and if he fails to do so, he will be responsible to his assignor for the damage sustained by reason of his default.—195 S. W. (Ky.), 813.

WIFE'S POWER OF ATTORNEY

When a man and wife live together, and he does business in her name under a general power of attorney, she must take the risk of his business ventures. She cannot repudiate a contract for the loan of money because it was used to pay on a certain grain option deal.—163 N. W. (N. D.), 264.

WRONGFUL ASSUMPTION OF AUTHORITY

A person who signed the name of another to a check, as agent of the latter, without authority to do so, was liable to the bank for the money he wrongfully procured from the check; his liability resting on his wrongful assumption of authority.—195 S. W. (Ark.), 678.

"RE-EXCHANGE"

"Re-exchange" is the price that the hold of a dishonored foreign bill of exchange must pay on the date of dishonor in the currency of the country where the original bill was drawn, payable where the original bill was payable, for a good bill, for the same amount of money.—116 N. E. (Ill.), 637.

BANKRUPTCY OF PARTNERSHIP—DISCHARGE

Under the bankruptcy laws a partnership may be bankrupt and individuals composing it solvent, and before the individual members can be discharged in involuntary bankruptcy, acts of insolvency must have been charged and proven against them.—163 N. W. (Iowa), 224.

GENERAL AND DEPARTMENT MANAGERS

A corporation, tho having a general manager, can vest in another agent the powers of a general manager representing it in the conduct of some department of its business; he standing in the same relation to the matters of his department as does the general manager to its general affairs.—165 P. (Cal.), 716.

NOTARY'S LIABILITY FOR MISTAKE

A notary's liability to a buyer of land for mistake in certifying to the identity of a person acknowledging a deed is greater than that of an indemnitor, and recovery can be had against the notary without showing reason for not suing the party who impersonated another in making the acknowledgment.—195 S. W. (Tex.), 911.

RETIREMENT OF PARTNER

Tho a member retired from a partnership and assigned his interest, the surviving member has a right to use his name for the purpose of maintaining necessary actions, to close up the joint business, and enforce the rights of the old partnership, and the retiring partner was a proper party plaintiff in any action so brought.—195 S. W. (Ark.), 680.

PHYSICIAN'S FALSE ANSWERS

If an applicant for life insurance makes truthful statements to medical examiner, who, without applicant's knowledge, changes answers to questions in application to make it appear that insured is a safe risk, insurer will be liable on the policy issued in consequence of the deceit of its agent.—165 P. (Ore.), 675.

RELIANCE ON FALSE REPRESENTATIONS

One, who by fraud induces another to enter into a contract with him, is precluded from asserting that the innocent party was negligent in relying upon the fraudulent and false representations instead of satisfying himself by an examination of a sample as to the character of the goods which the seller intends to supply.—163 N. W. (N. D.), 271.

MORTGAGOR'S AGREEMENT TO PAY PREMIUMS

A fire insurance policy's mortgage clause making the policy payable to mortgagee, as its interest may appear, provided that, if the mortgagor fails to pay the premiums, the mortgagee shall pay them, is not an absolute agreement on the mortgagee's part to pay the premiums, but merely makes such payment a condition to its recovery on the policy.—100 A. (R. I.), 1010.

MISREPRESENTATION AS GROUND FOR AVOIDANCE

Generally a misrepresentation as to what will be done in the future, or a statement of intention, will not warrant cancellation of a contract. Generally a mere expression of opinion, however erroneous, will not warrant cancellation of a contract. A misrepresentation may be with reference to the future, but so related to present conditions that its affirmation will be fraudulent.—165 P. (Mont.), 601.

FALSE PRETENSES

To commit the crime of obtaining money under false pretenses, an actual defrauding must take place; but it is not necessary to constitute the crime that actual pecuniary loss be suffered, or that it will necessarily be suffered, but if the party defrauded has been placed, by the false pretenses of the accused, in such a position that he may eventually suffer loss, it is sufficient to support the charge.—195 S. W. (Ky.), 802.

PREFERRED AND COMMON STOCKHOLDERS

Under a provision in a corporate charter and preferred stock certificates, giving the preferred stock certain dividends from the net earnings which should accumulate, if not earned in any year, such dividends cumulate while the corporation is a going concern. After a corporation's liquidation commences, preferred and common stockholders are on the same plane, except in so far as they have agreed upon their participation in the company's assets.—92 S. E. (Va.), 818.

DISCHARGE IN BANKRUPTCY—TIME FOR APPLICATION

Under Bankruptcy Act, July 1, 1898, c. 541, § 14a, 30 Stat. 550 (Comp. St. 1916, § 9598), providing that any person may, after the expiration of one month and within the next twelve months subsequent to being adjudged a bankrupt, file an application for a discharge, the twelve months' period runs from the expiration of one month from the adjudication, and an application for a discharge filed twelve months and ten days after the adjudication is in time.—241 F. (U. S.), 620.

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The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Cost of Making Drain Tile

Because of the public-spiritedness of one drain tile manufacturer, we are in a position to present to our readers production costs of drain tile.

We believe that it would be greatly to the benefit of every manufacturer of drain tile if he would be willing to submit his cost figures, so that comparisons could be made among the producers. In this way, where one manufacturer showed a lower cost in one department than the other manufacturers were able to operate under, this could be explained and thereby every drain tile manufacturer would be enabled to look to that particular department for greater economy in production.

The figures given herewith are for cost of production only:

	Per cent.
Labor	52.8
Coal	20.6
Power (electric)	11.1
Repairs and supplies	8.6
Depreciation	5.0
Tax and insurance	1.9
	100.0

⁂

Important Considerations in Storing Coal

Coal must be handled as economically as possible in a manner so as to produce the least possible amount of breakage, because fine coal is of less value than coarse and also from the standpoint of storage, fine coal is very objectionable, as it is now thought to be the determining element in the spontaneous combustion of coal.

Showing a Method of Reclaiming Coal from the Storage by Means of Wagon Loaders Which Might be Applicable to Clay Plants. This System has Proved to be Very Economical on Retail Coal Yards.

In choosing a storage system the following points should be considered:

1. The location, size, and topography of the available storage ground.
2. The capacity of the desired installation.
3. Cost of the necessary plant.
4. Cost of maintenance.
5. Cost of operation.
6. Amount of breakage due to handling of the coal.
7. Length of time the coal will probably be in storage.
8. The climate at the place of storage.

The requirements for an ideal storage plant are:

1. Adequate storage area.
2. Adequate facilities for rapidly and economically transferring the coal from the cars into storage and for reclaiming it out of storage or for rapidly moving any part of the pile that shows evidence of taking fire. For many storage plants these facilities should be designed so as to give a minimum of breakage in handling.
3. An adequate supply of water nearby.

By Constructing this Wooden Trestle and Storing up a Large Supply of Coal Now, the Flint Brick Co., of Des Moines, Iowa, Should Experience no Embarrassment Due to Fuel Shortage Next Winter.

An interesting experiment in storing coal was tried at the University of Illinois, where a great quantity of fine coal had been stored by packing it hard as described in the article on storing coal which appears in this issue. The coal that had been stored has now been reclaimed and used in boiler plants. Comparatively little trouble has been experienced with this storage pile and in the few instances where heating was discovered it was possible to quickly remove the coal and there has been practically no loss of material. The method of taking the coal from storage was by means of a movable elevator.

Trestle storage is employed in large retail yards and for factories, the railroad cars being hauled up an incline by a rope or pushed up by a locomotive if the gradient is easy and the coal being dumped in a pile on the ground.

The Flint Brick Co., of Des Moines, Iowa, has this type of equipment for storing its coal supply. A wooden trestle 300 ft. long containing one track was built running about thirty feet from the end of the kilns. The space below the trestle has been paved with brick so as to facilitate loading the trucks, carts, or wheelbarrows with the storage coal. Bottom dump cars are obtained which can be dumped and emptied in but a very few minutes.

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When They Are Loaded
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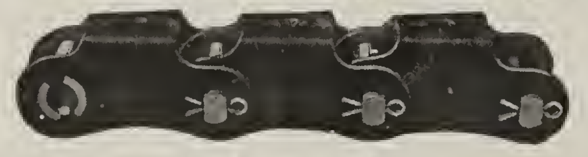

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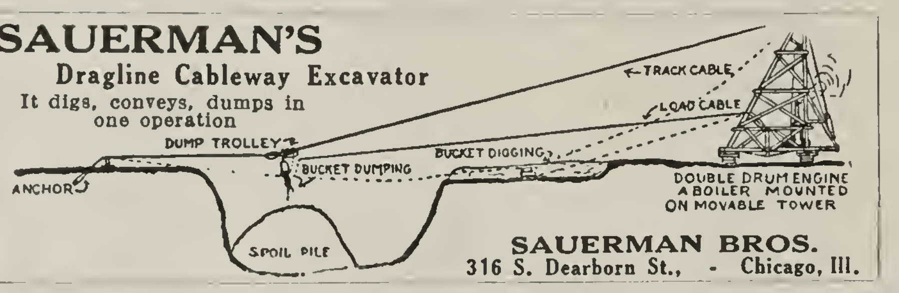

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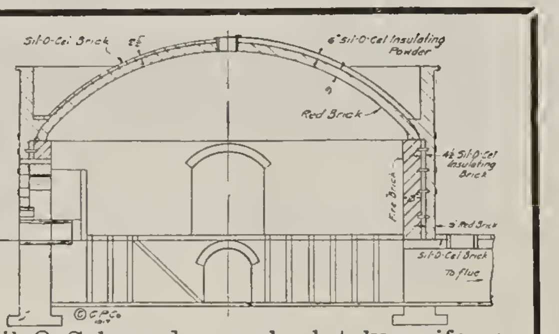

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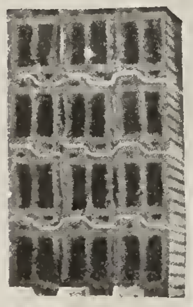

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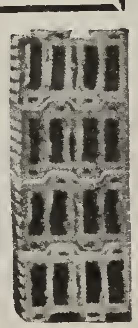

The Economy of Cork Inserts

This is an important topic that has not been written about or discussed to such an extent as have other transmission devices. Why this is so is unexplainable. It is a worthy subject because cork inserts are as much an economy factor as the other devices that stop belt slip. The principal functions of the cork insert is to stop all avoidable belt slip. In doing this considerable coal and money may be saved.

Thus where 2,000 tons of coal are burned per year where coal costs $3 per ton, and where the over-all belt slip is eight per cent., the cost of the belt slip in terms of the coal pile alone is $480.

To compute the cost of belt slip it is first necessary to find the percentage of belt slip. That is, if a driven pulley rotates only 95 times, whereas it should rotate 100 times, the percentage of belt slip is 5 per cent., or

$$\frac{100 - 95}{100} = 5 \text{ per cent.}$$

Then multiply the determined per cent. of slip by the number of tons of coal burned per year, and then by the cost of the coal per ton. Thus we have

$$(2{,}000 \times \$3 \times .08 = \$480)$$

the yearly cost of belt slip.

To arrive at the actual and accurate cost of belt slip is not easy, however. It is plainly more than $480 in such a plant as above, because coal is not the only thing that is lost. The belts wear out more rapidly where there is slip, and the cost of this slip can only be approximated.

Let us assume, for example, that with cork inserts a plant manages to keep its belts running for ten years. The first cost of the belts is, say, $5,000. The average cost, then, is $500 per year. Without cork inserts the belts wear out in eight years, and the average cost is $625 per year. This would mean a saving of ($625 — $500) $125 per year, or $1,250 in ten years. As these figures may not apply to every plant, this formula may be used and the reader can substitute his own conditions.

FORMULA FOR FINDING SAVING DUE TO CORK INSERTS

Dollars saved with cork inserts from belt cost standpoint only, equal

$$\frac{(Nc - N)\,K}{N}$$

where Nc = life of belt in years with cork inserts,
N = life of belt in years without cork inserts,
K = first cost of belt in dollars,

the cost of lost product must also be considered. The value of cork inserts appears here again, and the problem can be approximated mathematically. Let us take, for example, the above plant where over-all belt slip is 8 per cent. and where the output should be worth, without slip, $2,000 per day. With 8 per cent. slip it is evident that the machines are running 8 per cent. too slow and the product is, therefore, diminished by 8 per cent. Hence the daily output is approximately

$$\$2{,}000 - (\$2{,}000 \times 8\%) = \$1{,}840 \text{ instead of } \$2{,}000.$$

To make the formula clearer, and to enforce this cost on the mind of the plant owner, I have thrown it into this form:

$$\text{Dollars output lost per day} = \frac{D}{1 - S} - D$$

where D = present daily output in dollars;

S = per cent. of belt slip.

Thus, if your present daily output amounts to $1,500, and if your over-all belt slip is 10 per cent., we have, after substituting in the formula

$$\frac{1,500}{1-.10} - \$1,500 = \$1,667 - \$1,500 = \$167.$$

One hundred and sixty-seven dollars lost per day is considerable and may mean the ruin of a small plant, unless discovered and rectified. This "product loss" is often saved by speeding up the driving engines or motors to the extent that after belt slip is deducted the final speed is what it should be anyway. That method is better than none at all, but it is not the best practice. The best practice is to eliminate all belt slip.

Thus comes the cost of defective product. Where belt slip is permitted, the product frequently suffers on that account. The loss cannot be figured mathematically, because it is too uncertain. It may vary from a trifling to a very serious amount. To reduce this loss to the minimum, belt-slip must be completely eliminated. By so doing, all machines are driven by steady speeds. There is no bunching here and thinning there. Production is uniform, day in and day out. Such is the ideal state as regards speed, and the value of cork inserts is further emphasized.—*W. F. Schaphorst, M. E.*

* * *

Embargoes Cause Shortage of Raw Materials

The admitted scarcity of raw materials, due to the trouble in obtaining cars is bound to prove a handicap to domestic pottery manufacturers this season. At the present time, it is exceedingly hard to obtain flint, a very important base for domestic pottery. The flint grinding mills have anticipated their wants, so far as raw material is concerned far in advance, but it is impossible, so it seems, to have these cars rushed thru. This condition with the flint mills is reacting on the pottery manufacturers, as they are unable to procure sufficient quantities of ground flint for needed stocks.

Placing sand is also hard to obtain. Only recently a glass manufacturer went thru the eastern Ohio pottery district in an effort to gather several cars of sand. He was unable to get his wants supplied.

Also cooperage is more scarce now than ever before. Packages are very hard to get on account of the shortage of cooperage stocks, and the pottery manufacturers are now trying to buy up second hand barrels. The price of these is almost as high as new barrels, but the manufacturers have to take them.

Labor is also becoming more scarce, and therefore the manufacturers are not in a position to obtain full production in all departments. The coming draft is bound to take more workers from the trade, and there are no new people to take their places.

Orders with the manufacturers are exceedingly heavy, and as the Government has proved to be a rather active buyer of late, all of this business is being given first place on the order files. Inasmuch as the different camps have started to use certain items in hotel ware, the pottery manufacturers are compelled to increase their capacity on these lines. This ware is being rushed thru to the different camps under a priority order, but even so, the deliveries are late on account of the transportation problem.

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a belt breaks
From want of a belt—
a machine is idle
From want of a machine—
time is lost
From want of time—
a contract is lost
From loss of a contract—
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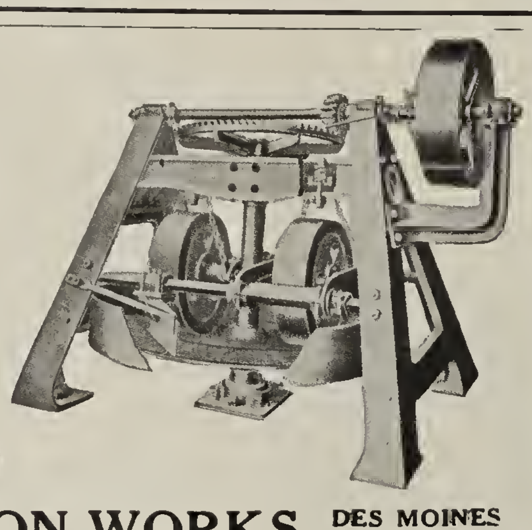

Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

IN the WAKE of the NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

E. L. Grand, of the Pursell-Grand Co., Cincinnati, Ohio, was ill for a week at his home but is now back at his office again.

A. Chandler Gladding, of Gladding, McBean & Co., from the terra cotta and sewer pipe plant at Lincoln, Cal., is visiting San Francisco.

Charles Taylor, who has been manager of the plant of the Atlantic (Iowa) Brick & Tile Co. for some time, will move to Creston to take charge of a similar business.

After spending several months in California, Charles W. Foreman, general manager of the Owen China Co., at Minerva, Ohio, has returned to his office. He was called to the coast on account of the serious illness of his mother.

John W. Kaufman, president of the Claycraft Brick Co., Columbus, Ohio, who is prominent in fraternal and society circles of the Buckeye capital, has been selected Exalted Ruler of the Columbus Lodge of Elks.

C. F. Heileman, son of Charles Heileman, one of the founders of the Fort Dodge (Iowa) Brick & Tile Co., has announced that he will be a candidate for clerk of the courts at the primaries in June. Mr. Heileman is a native of Fort Dodge and enjoys a very wide acquaintance thruout the county, which will be a valuable asset in the political campaign.

H. C. Kleymeyer, general manager, and John Andres, secretary and treasurer of the Standard Brick Manufacturing Co. at Evansville, Ind., and Michael D. Helfrich, president of the Sanitary Pottery Co. of that city, are on committees named by the Evansville Chamber of Commerce to take an active part in the third Liberty Loan campaign that started on April 6th. Evansville and Vanderburg counties expect to raise in the neighborhood of $3,000,000.

Florus David Meacham, president of the Meacham & Wright Brick Co., Chicago, Ill., died at his home in Hinsdale, Ill., on March 23. Mr. Meacham was born in White Hall, N. Y., coming to Chicago with his parents in 1857. In 1874, with F. S. Wright, he formed the firm of Meacham & Wright, dealers in cements, which was incorporated and later grew into the Meacham & Wright Brick Co., of which concern he was president until he retired from business in 1916.

William Sankey, aged 81, one of the first brick manufacturers of Pittsburgh, Pa., died at his home in that city on March 20. Mr. Sankey was born in Pottsville and came to Pittsburgh seventy years ago. He is the last of three brothers who began the brick manufacturing business at 2112 Carson street in 1861. In 1881 Mr. Sankey's health failed and he retired from active business, leaving the management of the plant to his sons, who now operate under the name of Sankey Brothers in the same office and plant established by their father.

California

The Western Marble & Tile Co., Los Angeles, Cal., has been authorized to sell to its stockholders 250 shares of its capital stock at par for cash.

The city clerk of Seal Beach, Cal., is advertising for bids for the laying of a sewer pipe in that city. Bids will be taken on both cement and vitrified clay pipe.

The Coast Fire Brick Co. has filed incorporation papers at Oakland, Cal., the capital stock being $22,000. The directors are M. Fitzpatrick, C. E. Hall and S. A. Eyre, all of Oakland.

The West Coast Pottery Co., San Francisco, Cal., is clearing the ground for a new pottery works east of the Millbrae station. The company expects to employ from 400 to 600 men at the new plant.

The Board of Public Works of San Francisco has decided to lay a fourteen-foot strip of brick paving along a portion of Carolina street, and has advertised for proposals for the work.

When the federal embargo upon magnesite shipments was lifted recently, $100,000 worth of ore which had been tied up for weeks at Portersville, Cal., was started on its journey to various factories.

The contract for the improvement of Clipper street between Diamond and Douglass streets, San Francisco, Cal., has been awarded to the Fay Construction Co., who bid forty-eight cents per square foot for the vitrified brick part of the construction.

It is rumored that William Butler, well known in brick lines thruout the state, is contemplating building a brick plant in South San Francisco, Cal. He intends to manufacture refractory brick exclusively, and if reports are true, will begin construction work on the plant some time before June.

San Francisco firms are to do most of the work on the new $300,000 State Fair Agricultural Pavilion, soon to be erected at Sacramento, Cal. N. Clark & Sons will supply the architectural terra cotta at a cost of $15,520, and Gladding, McBean & Co., will supply the tile roofing, on their bid of $12,100.

The trade in San Francisco, Cal., is beginning to look favorably upon the trade acceptance idea; and it now appears as tho the trade acceptance method would soon be in general use in the brick and allied industries. The agitation of the subject by the Refractory Manufacturers' Association is having a good effect and will, according to some members of the trade, bring early results.

E. M. Davis has been elected manager of the Pacific Tile & Terra Cotta Co.'s plant at Tropico, Cal. Mr. Davis is a son-in-law of Lycurgus Lindsay, owner of the plant, and has been actively connected with the business for the last ten years, altho the greater part of the past two years were spent in developing his large ranch in the Imperial Valley. For the present the clay products department of the plant will be devoted exclusively to sewer pipe. The talc grinding department is being enlarged to meet a heavy demand for ground talc, created by conditions resulting from the war. One portion of the plant has been turned over to chemical manufacture, with which the company has been experimenting. A battery of large redwood tanks has been installed and it is intended to engage extensively in this new industry.

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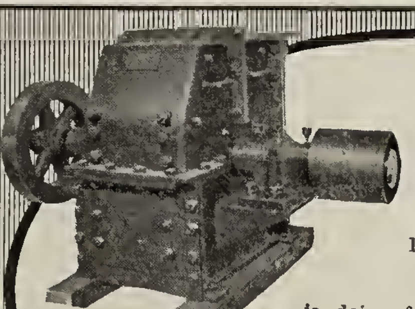

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Brick and Clay Record

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Connecticut

The Eastern Brick Co., of Berlin, Conn., and the Central Connecticut Brick Co., of New Britain, Conn., are among the creditors listed in the recent bankruptcy petition of the Sampson Brothers Contracting Co., Inc., of Springfield, Mass. The company has liabilities of $24,991 and assets totalling $9,400. The Eastern Brick Co.'s claim is for $1,597 and the Central Connecticut's $1,086. Neither is secured.

Delaware

Some of the brick street pavements laid in Wilmington, Del., many years ago, have stood up so well that instead of tearing them up to improve the streets, the pavement is being allowed to remain as a foundation for a bitulithic surface, and the result is proving quite satisfactory.

Some of the Wilmington (Del.) architects say they find difficulty in getting bids on plans offered for estimate. The inference is that contractors are well booked for work and hesitate at new commitments in view of the still somewhat unsettled condition of the materials and delivery market.

It is a source of much gratification to those interested in the re-erection of the Historical Building (erected in 1740 as the First Presbyterian Church) in Brandywine Park—having been removed from Market Street, in the business section of Wilmington, Del.,—to find that nearly all of the original face brick contained therein will be available, notwithstanding the lapse of almost two centuries since they came from the kiln in England and made the voyage across the Atlantic. A few of the brick have grown soft by exposure, while a few more have been broken in the process of chipping off the mortar in which they were laid, which is harder than the brick and makes the task of cleaning them difficult. The old building was torn apart, to make room for business development in the heart of the city, and it is being re-erected in its original shape in the park.

Idaho

The Anderson Brick Co., Sand Point, Idaho, has increased its capital stock to $15,000.

Illinois

Two cottages each of sixteen rooms and each two story brick structures, will be built for the Illinois State Orphanage Association at Carmi, Ill. The bids were opened a few days ago.

Fire did considerable damage to the plant of the Monmouth (Ill.) Brick & Tile Co., on March 20, completely destroying all the buildings and practically ruining the machinery housed in some of the sheds. Little insurance was carried and the loss is almost total.

The Decatur (Ill.) Brick Mfg. Co. has resumed operations at its plant, about thirty men being now employed on the yards. The company is having a great deal of trouble in getting a supply of cars. The Illinois Traction system has a contract with the company to ship its shale, but has been after an increase in rates of 125 per cent. According to officials of the brick company, the case will be carried to the supreme court if necessary to make the I. T. S. fulfill their part of the contract and lower the freight rates.

Work on paving Chicago's streets, which was curtailed when the cost of material took an upward trend, is to be

resumed, and many miles of worn and rough streets will be replaced as the result of a 15 per cent. cut by the contractors. Paving contractors have submitted their estimates of cost to the city for brick for the year 1918 as $8.75 per lineal foot; asphalt $8.00 and asphalt macadam $6.75. These figures are below the estimates of the city's engineers and it was this discovery which led to the decision to resume paving work.

Indiana

A store building at Petersburg, Ind., is to be remodeled to be used by a new trust company that was organized recently.

The Eagles Lodge at Washington, Ind., will in a short time remodel a large store building and convert the same into a home.

Work is being pushed on the new warehouse of the Central Glass Co., Evansville, Ind., and it is expected the building will be completed by the first of May.

Reconstruction of the parts of the Woodburn (Ind.) Tile & Brick Co., which were demolished by fire recently, is nearing completion and operations will begin at the plant in the very near future.

The new wholesale grocery store of E. Bierhaus & Sons at Vincennes, Ind., that cost in the neighborhood of $100,000 has been completed. The brick for this building was furnished by the Standard Brick Manufacturing Co., Evansville, Ind.

The new high school building at Boonville, Ind., is now ready for the roof, the brick work having been completed. Lack of materials has held up the new canning factory that is being built for B. F. Shaver & Bros., at Boonville.

The large brick addition to the United States government building at Evansville, Ind., is expected to be completed by the first of May. It will cost in the neighborhood of $150,000. Nearly eighteen months has been required to build the addition, due to the fact that the contractors were unable to get certain materials on time.

The Standard Brick Manufacturing Co., Evansville, Ind., is furnishing the brick for the new junior high school building in that city. The company also furnished the brick for new additions to the Dyer Canning Co. and the Hercules Buggy Co. at Evansville. The Eagles Home at Mt. Vernon, Ind., that was completed recently was built with brick furnished by the Standard company also. The company will furnish the brick for a large garage that is to be built by the Keck Gonnerman Co. at Mt. Vernon, Ind. Work on this building started a few days ago.

The several plants of the Standard Brick Manufacturing Co., at Evansville, Ind., are being operated now on about one-half time and the company has between three and four million brick on hand. John Andres, secretary and treasurer of the company, says: "We are plugging away and doing the best we can under the circumstances. The various orders of Director General McAdoo, advising people to curtail their building operations all they can, of course, are having some effect. We are looking for an order at any time from the national fuel administration to curtail our output fifty per cent. and this too will handicap the manufacturers to a great extent. But we must bear our share of the burden in the great world war and after that conflict is over we anticipate great things in this country." Mr. Andres reports labor scarce and he says that most of the brick plants in southern

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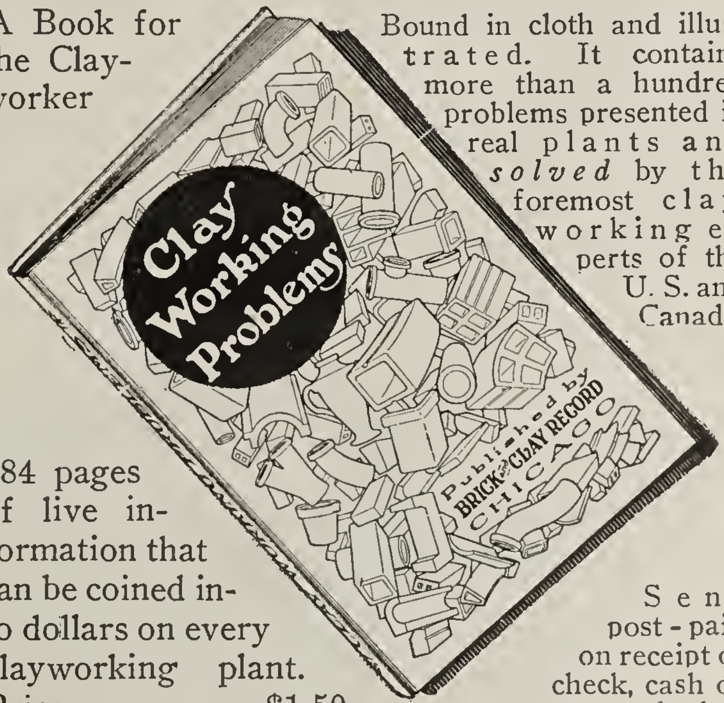
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Better ware— at a lower cost. It can be done. Ask how.

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Indiana are being operated short handed. He does not look for the situation along this line to improve.

Kentucky

The brick plant of Kleymeyer & Klutey, at Henderson, Ky., which recently resumed operations, is now shipping a good many brick to Owensboro, Ky.

The Burdorf-Brecher Co., of Louisville, Ky., dealers in fancy tile, mantles, fixtures, etc., has changed its name to the Brecher Co., having recently filed amendment to its charter.

The Jewish Hospital, of Louisville, Ky., has secured an endowment of more than $100,000, and plans erection of a large brick addition, but has announced that work will not start until the close of the war.

The Louisville (Ky.) Brick & Tile Co. has been getting a fair share of what little local demand there is for brick, tile, and other clay products, and has secured a good run of country business, especially on drain tile.

An addition will be built to the Fredericka apartment house at Owensboro, Ky., that will cost in the neighborhood of $40,000. Several large brick residences are also to be built this summer at Owensboro, and Shawneetown, Ill.

With a capital stock of $28,000, the McCormick Lumber & Supply Co. has been incorporated at Cynthiana, Ky., to handle brick, lumber and general building materials. The company a short time ago took over the Cynthiana Lumber Co.

Fire which recently destroyed the coal docks of the Chesapeake & Ohio R. R. Co., at Maysville, Ky., did some damage to the plant of the Spahr Brick Co., which adjoins the coal docks. However, the main plant and buildings were saved, altho they caught fire on several occasions.

About $60,000 worth of street improvements will shortly be undertaken in Louisville, Ky., bids to be opened within a few days. A large portion of the lettings call for vitrified block paving, one or two for wood and the balance for granite. Vitrified brick, as usual, is the favorite paving material.

The R. B. Tyler Co., Louisville, Ky., has recently landed a contract for supplying about 60,000 buff face brick, on the new Jewish Temple Adath Jeshuren, which will be erected at Brook and College streets. Some white vitrified brick and colored tile will also be used. The temple will cost between $50,000 and $75,000, and probably will be one of the few contracts of its kind undertaken this year.

Plans have been laid out and announcement made of the coming convention of the Kentucky Clay Products' Association, which will meet in Louisville, at the Tyler Hotel, on April 11, this being the first annual meeting of the organization. Harry C. Cramer, of Lexington, Ky., is president and J. Crow Taylor, of Louisville, secretary. These two men are working on the program and promise an interesting meeting.

Louisville, Ky., brick manufacturers adopted the daylight saving schedule without a ripple, clocks being advanced an hour, and business going ahead as usual. The average worker in a brick plant prefers starting early, and getting the day's work out early, as these men are working on "stints," and the earlier the better. Kiln men stand regular watches, and care very little about an hour or so one way or the other.

James T. Howington, president of the Coral Ridge Clay Products' Co., Louisville, Ky., reports that his company has no room for complaint, as business has been exceptionally good, and the company has good orders on its books. "There is not a cloud in the sky just now," said Mr. Howington. "Our plant is operating to capacity, the car supply is better than it has been for some time, coal is being had without difficulty, business is plentiful, collections good, and we are getting plenty of labor."

The Kentucky Legislature adjourned without passing any drastic legislative bills into laws which would seriously affect the clay products trade. An eight-hour bill, which for a time looked very dangerous, was killed by a large majority vote in the House, just before the close of the session. This bill would have affected all employers, and would have worked a great hardship on Kentucky brick men and manufacturers in general. The legislature passed one bill under which every able bodied man in the state will have to work thirty-six hours a week, a penalty being provided for those who fail to do so, during war times. This bill was passed to break up loafing and bumming at a time when men are badly needed, especially on the farm.

In Louisville, Ky., the demand for brick has been comparatively quiet, due largely to the efforts of the government to discourage building in order to conserve labor. However, there has been a good demand from many small rural points, where shipments have been going forward steadily. Locally, about the only demand is for material to be used in a few plant additions. Collections have been very good as a whole. There has been a steady demand for drain tile for agricultural purposes, with a fair demand for building tile, part of which is coming from the government. Fire brick are in very active demand, principally for government use, and for the steel and iron plants. Sewer pipe is coming along much better with improvement in building operations and street work.

Maryland

The District Clay Products Co., 1802 Whitmore avenue, Baltimore, Md., has been incorporated with $125,000 capital stock, by Samuel A. Ver Valen, Samuel G. McClave, and Clarence L. Peaslee, to manufacture brick, tile, hollow ware and other clay products.

Massachusetts

The Hampshire Brick Co., Holyoke, Mass., has filed a statement for the fiscal year ending February 7, 1918, showing total assets of $76,597, of which the company's plant and equipment is valued at about $31,000.

Massachusetts drain tile dealers are interested in the outcome of a petition filed with the Interstate Commerce Commission recently by the Southern railroads who ask for permission to increase rates on sewer pipe and drain tile from Chattanooga, Tenn., to Boston and other New England cities, eleven cents per 100 pounds.

This is spring cleaning time in many of the brickyards in Massachusetts and New England and crews of men are at work clearing up and preparing for the resumption of operations. In most sections the snow has entirely disappeared and it soon will be possible to start manufacturing. Altho manufacturers are optimistic, there is some uncertainty as to what trade conditions may be, in view of the slackening up in building operations.

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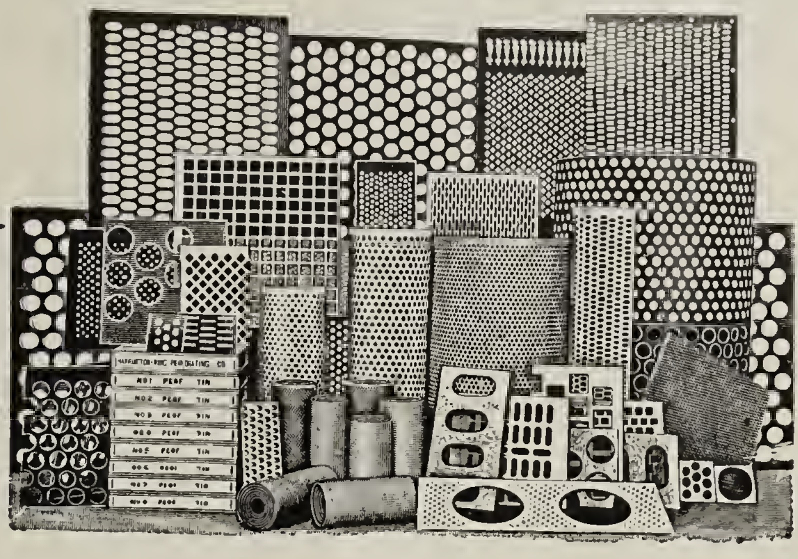

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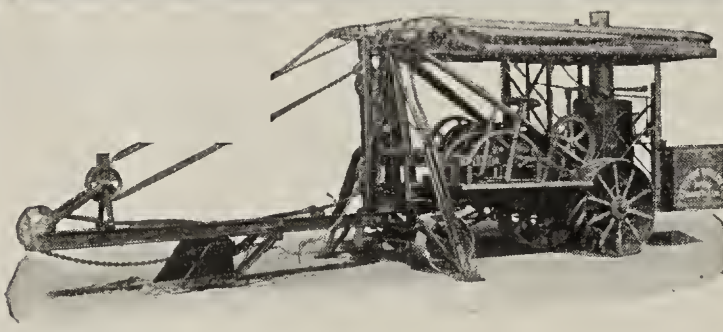

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The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

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Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

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STEAM SHOVELS

No announcement has been made as yet as to where the contract will be placed for the several million brick to be used in the erection of the huge new government store house at South Boston, Mass. The building will be the largest structure of its kind in the world and in addition to the brick a large amount of other building materials will be required. One estimate places the amount of crushed stone that will be required at 300.000 cubic yards.

An interesting fact in connection with the control of the Winchester (Mass.) Rock & Brick Co. was brought out at a recent hearing in that town on the question of renewing the company's blasting license. It developed that the new organization which recently has taken over control of the company, is headed by Major General George W. Goethals, acting quartermaster general and famed as the builder of the Panama canal, as president while Charles R. Hughes, the superintendent, also is from the Canal zone.

Michigan

Awards for the furnishing of various kinds of material for paving and other construction work to be done at Flint, Mich., were made recently, the Flint (Mich.) Coal Co. being the successful bidder on the sand-lime brick; Metropolitan Paving Brick Co., Canton, Ohio, and the Hocking Valley Brick Co., Columbus, Ohio, securing the contracts for the wire-cut brick.

Missouri

Contractors in St. Louis, Mo., are inclined to predict a better year of building prosperity than was that of 1917. Much more building is in contemplation than at this time last year, while a considerable amount is under way.

While the brick and general building situation in St. Louis, Mo., has been but very little improved during the last three months, better general conditions are coming, is the belief of those who have been studying the problems of the business here. Manufacturers still find themselves handicapped by a continued shortage of railroad equipment and the coal embargo. A continuation of this condition has discouraged plant improvements to a very marked degree.

Festus J. Wade, National Dollar-a-Year man, before the Board of Aldermen, has advocated the establishment of new building rules in St. Louis, Mo., affecting the height of buildings. Wade has urged that the height of business buildings should be limited to seven stories and that of apartment structures limited to four. The plan seems destined to meet with general approval from various civic organizations and from building interests. Wade is president of the Mercantile Trust Co. and is chairman of the War Governing Commission of Missouri.

Besides the new government warehouse at the arsenal, which will require little less than 3,000,000 brick, a new Y. M. C. A. annex, which will be the largest association building in the Central West, and a number of business structures, considerable activity in apartment house building is in progress in St. Louis, Mo., at the present time. The Arsenal building will be 600 feet long, 200 feet wide, and five stories high. It will be the most modern warehouse in the central group of states. A rumor is also afloat among material men that the Government is also contemplating a building project in St. Louis of far greater magnitude than that at the Arsenal. These rumors are said to be well founded but further information is being withheld for the time being.

Property owners on Vandeventer avenue, St. Louis, Mo., have started a movement to repave that thorofare with brick. Plans are being developed towards taking out the granite pavement for many blocks. The Board of Public Improvements is considering widening the avenue at the same time, making it 90 feet wide in some places and 80 in others. It is now 70 and 60 feet wide. A great deal of traffic has been kept off the street, it is argued, on account of the rough granite finish and real estate values, as a rule, have depreciated. It is to popularize the street that property owners have taken up with the city the question of making the pavement one of brick at the time the work of widening is being done.

Montana

It has been predicted by contractors, builders and real estate men of Butte, Mont., that brick houses will become more popular than ever as a result of conditions induced by the war. Government requirements are making heavy drains upon the lumber resources for ship building, barracks, airplane purposes, etc., so that the demand is exceeding the supply and as a consequence, prices have soared to unprecedented levels. Brick, however, has increased only fifty cents per thousand in Montana during the past twelve months.

New Jersey

M. D. Valentine & Brothers Co., Woodbridge, N. J., manufacturers of fire brick, have filed notice with the Board of Public Utility Commissioners of an increase in their capital from $300,000 to $600,000, to provide for expansion.

Encouraging signs of a revival in building activity in Newark, N. J., and vicinity have been noted during the past two weeks, and the volume of new construction work is important. The recent favorable weather undoubtedly has had much to do with the increased amount of building placed under contract, and it is practically certain that the spring and summer months will be very active in this respect. Permits for the construction of a number of large apartment houses aggregating a total of approximately $210,000 have been taken out, and contracts for a considerable number of small industrial plants have been placed.

Brick manufacturers in New Jersey are more or less undecided as to what to do in the way of opening their yards this season, because of the announcement that their fuel supplies will be cut fifty per cent. Some manufacturers have been able to secure supplies of wood with which to operate their kilns, but others must depend upon the coal supply. Some changes are being contemplated by Hudson River brick manufacturers in order to increase the efficiency of their kilns, but these are likely to be too costly and too revolutionary to be adopted by all the manufacturers and they, therefore, will have to be governed by the fuel administration's mandate.

Along the Hackensack River and at the scattered plants in the northern part of New Jersey very little has been done thus far this spring, tho March was an unusually good month so far as weather is concerned. The situation is such in the industry that few know what to do. It is certain that New Jersey manufacturers are awaiting developments, hoping for some modification which will enable them to do business. Unless some modification in present conditions develops within the next few weeks some plants will not open this year. They cannot ship their product unless they are equipped

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Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient Tycos aids.

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Coal Costs Lowered 10%

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Cyclone Boiler Grates

we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

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PRICE PYROMETERS

Control Temperatures

Prevent Guesswork

They are so simple in operation that all the kiln men can understand and quickly learn to govern their firing methods by watching the pyrometer. A big coal, labor and time saving is guaranteed. Price of equipment is surprisingly low in cost.

Write

The Price Electric Company
12367 Euclid Ave. Cleveland, Ohio

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
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Cincinnati, O. Kansas City, Mo. Boston, Mass.
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We carry a complete line of high grade chemicals for the clay industry

with motor trucks, and few are, and they will be unable to secure labor. These two influences are sufficient to prevent manufacturing until after some change is made in present conditions.

A trip along the Hackensack River last week disclosed the fact that not a plant is doing anything in the way of business. One firm sent out some men to rescue barges that were caught in the ice last fall and have been frozen in all winter, but that is all they have done. Not a yard is open. The Hackensack Brick Co. is equipped with motor trucks for delivery within a reasonable radius and it is probable that they will open their yards. So far as the building situation in all that region is concerned, it is practically nil. With the exception of the houses required for war workers nothing will be done. Some operations begun last fall are to be finished, if the material can be obtained, but aside from that the volume of business will be too small to be considered. Building all thru this vast manufacturing region, which has developed so rapidly during the past fifteen years, is virtually stopped.

New Mexico

Improvements contemplated at Camp Cody, near Deming, N. Mex., will involve the expenditure of approximately one million dollars. One of the most important items will be the installation of a complete sewer system.

New York

The housing problem at Albany, N. Y., is a serious one, and special efforts are being made to secure the necessary accommodations in order that the work on a large government contract secured by the Rathbone, Sard & Co. may be accomplished at the local plant of the company.

The Kinkletown Brick & Kaolin Co., Mount Vernon, N. Y., has been incorporated with a capital of $300,000 to mine for clay and engage in the manufacture of brick and other clay products. K. Farr, Mount Vernon; A. Floyd Barry, Brooklyn; and Samuel H. Wandell, New York, are the incorporators.

The market for Hudson River common brick has again been comparatively quiet for the past two weeks, production being very much curtailed by fuel shortage and difficulty in securing materials and labor. Prices continue to hold steady at existing levels, and it is understood that with the commencement of a number of building projects, the demand will be considerably increased. There is generally a more optimistic feeling due to the favorable weather conditions.

Ohio

The D. C. Shorey Brick Co., Cincinnati Ohio has been able to obtain a number of nice orders for both face and common brick, which have been very welcome.

Charles Frank of the Nelsonville (Ohio) Brick Co., attended lettings of contracts at Defiance and Troy, Ohio, last week. In both instances the work is to be done with paving block.

M. M. Morrow, sales manager of the Hocking Valley Brick Co., Columbus, Ohio, attended a state highway letting at Lansing, Mich., last week. Considerable brick paving was specified in the contracts to be awarded.

The large contracts that were to have been started this spring in Cincinnati, are being held up as yet, with one exception—that of the Palace Theater. The Dixie Terminal building is still being delayed.

The Electric Clay Forming Co., of East Liverpool, Ohio, has been incorporated with a capital of $10,000 to manufacture clay products. The incorporators are: Herbert A. Miles, Eber J. Smith, James Miles, Lois Miles and Margaret Smith.

While there is a good demand for common brick in Cincinnati, Ohio, there is only a limited supply to be had. The plants for the most part are not doing anything as yet and the operation of those closed down will not begin for a little time.

A strike of approximately 1,200 in the building trades of Lorain, Ohio, has been called and construction work at that place is at a standstill. The strike was called when members of the Lorain Employers' Association refused to sign a new wage scale containing marked advances.

The second large order within ten days, for prison made brick, was shipped from the Junction City (Ohio) plant during the week. The order was for 80,000 paving block, which were shipped to Hudson, Ohio, where they will be used in paving a roadway which is being used considerably by the government.

The Cleveland (Ohio) Builders Supply Co. is furnishing the face brick for the new plant of the Chandler Motor Co., at East 131st Street, Cleveland. This plant will make aeroplane parts. All the brick will be of red tapestry. This is one of the largest brick contracts let in Cleveland this year.

Some improvement in shipping facilities from many of the brick plants of the Buckeye state is reported. This is especially true of the plants served by the Hocking Valley and Toledo and Ohio Central lines. They have a better car supply and apparently government requisitions for box cars are not as heavy as formerly.

Several Cleveland (Ohio) building supply and delivery interests are planning to fight a city ordinance, which seeks to forbid the use of city street paving to trucks carrying more than ten tons weight. The opponents of the law claim it is contrary to a state law, which permits hauling of heavier than ten ton loads, providing the trucks are equipped with proper sized wheels.

The Blair Brick Co., Cincinnati, Ohio, has about two million common brick at its plant on the Ohio river, but these cannot be shipped until the fleet of barges has been put in shape. The company is building one new barge and overhauling others and it will be some weeks yet before the brick can be moved. The plant will not be operated until the barges have been put in trim.

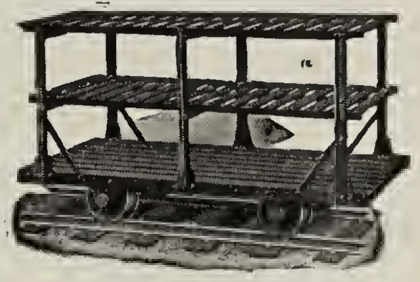
County commissioners of Columbus, Ohio, will go before the state highway commission to ask the state for $75,000, half of a sum needed to repair four miles of the Chillicothe Pike and a mile of the National Highway. The county will put up the other $75,000. It is said that a portion of the work will be paving block. If the Chillicothe Pike, South High Street, is repaired, there will be practically a thru road from Columbus to Camp Sherman.

A. C. Van De Velde, sales manager of the Lakewood Masons Supply Co., Cleveland, Ohio, has resigned to become manager of the builders' supply department of the Lakewood Lumber Co. This is a new department for the Lakewood Lumber Co., and is another step in the general movement of lumber interests in Cleveland

Not
very
long ago
one of the
largest
hollow ware
manufacturers
remarked —
that they had
been using
WATT
CARS
for about ten
years and they
had given
good satisfaction.

Soon
after that a
fire brick man
said that
WATT
CARS
on their plant
were giving
excellent
service, and
that he had
found the
WATT
COMPANY
fair and
liberal in
their business
dealings.

Which, of course,
is just what
you want, so here
is our address



**The
Watt
Mining
Car
Wheel
Co.,**

**Barnesville,
Ohio,
U. S. A.**

to meet the growing demand for other materials as well as lumber.

With the coming of spring and consequently better weather conditions some increase in manufacturing in the face brick plants of Ohio is seen. The greatest activity is noted in the section around Akron and Alliance. Most of the face brick plants in the Hocking Valley are still closed, but will be started if conditions continue to improve. It is estimated that the output of Ohio face brick plants is now about 20 per cent. of capacity which is double that of January and February.

Sales Manager Matthews of the Claycraft Brick Co., Columbus, Ohio, reports a slightly better demand for face brick, which is especially gratifying at this time. While the orders are not as large as in some previous years they are much better than has been the case for several months, and the improvement is taken as a good indication. Mr. Matthews reports a better car supply for shipping altho there is still some delay in delivering the product of the company's plants.

The Hocking Valley Products Co., Columbus, Ohio, manufacturers of face brick, has booked two contracts recently. One is for the new school building at Defiance, Ohio, which will require something over 100,000 brick, while the other is a new hotel to be erected at Ironton, to take 250,000 brick. Both buildings will go forward as rapidly as possible. H. M. White, sales manager of the brick department, reports that a larger number of gondola cars are now being secured but that box cars are still scarce. This hampers shipping in certain sections.

Bids were opened March 29 by the Ohio Highway Commission for considerable paving work in various parts of the state. Owing to the unusual war conditions and inability to get shipments promptly or a good supply of labor, bidding was not very brisk. L. C. Herrick, of Norwalk, Ohio, bid $213,740.70 for a stretch of brick paving on the Cleveland-Buffalo road in Lake county and another section of the same road will be paved by Mr. Herrick, at a loss of $150,626.31. A section of the Malaga-Alledonia road in Monroe county will be paved with brick at $13,669.11.

The announcement that the War Department will build an immense storage plant on the Pennsylvania and Baltimore & Ohio just east of Columbus, Ohio, has caused considerable activity in common brick circles. Just how large the plant will be is not yet stated but it will cost between $5,000,000 and $8,000,000, possibly more. It was also stated that the contract had been awarded to the Hunkin-Conkey Co., of Cleveland, but immediately representatives and senators in congress got busy to have the contract placed with Columbus contractors. It is estimated that the first requisition for common brick will be about 3,000,000, more to be used later. This work will help the common brick market in central Ohio to a large degree.

The unimproved sections of the National Highway in Ohio, contracts for which were let several years ago, and are as yet unfinished, have been taken from the hands of the original contractors, and placed with Harmess Renick, of southern Ohio. This contractor has seventy-two teams of his own, and work is promised by July 1, this year. There are fourteen miles for brick construction, and several different kinds of paving brick will be used. R. C. Burton, of the Burton-Townsend Brick Co., Zanesville, Ohio, who has fourteen miles of the highway contracts in his county, has let to several

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

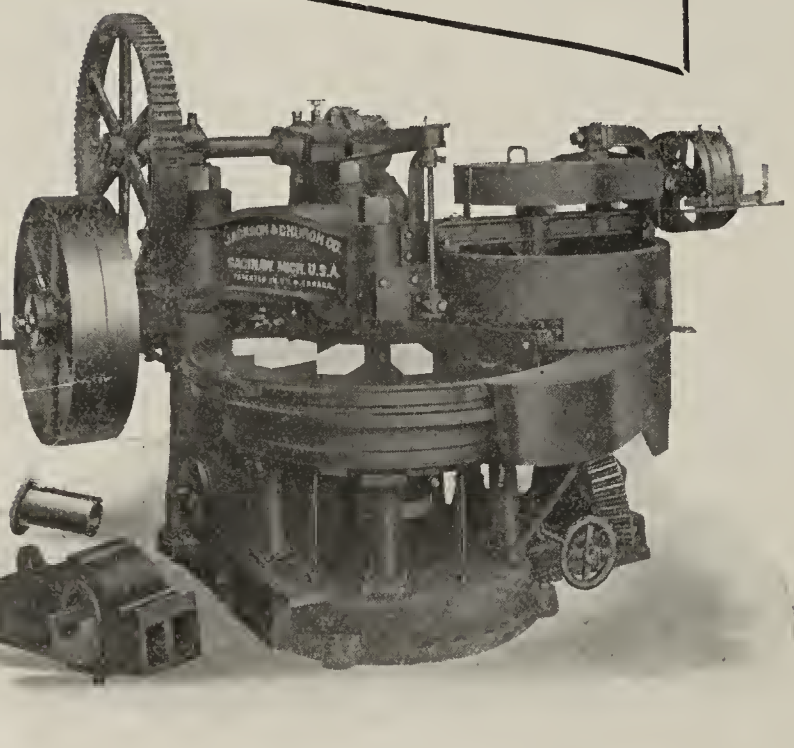
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press sub-contractors and will push the work to early completion, according to recent information from the National Paving Brick Manufacturers' Association, in Cleveland.

Operation of the plant of the Warren B. Ferris Brick Co., at Canton, Ohio, has been resumed under the direction of the United Refractories Co., of Columbus. W. J. Rinehart has been appointed general manager, and is giving personal attention to the Canton plant. The establishment had been closed since last fall. Fire brick will be the chief product of the Canton factory, and it is planned to turn out about 35,000 daily for the present. Following the completion of machinery installation, plans for a high quality brick production will be made, and the production increased to 50,000 a day, according to Mr. Rinehart. For the present about sixty workers will be employed, the number being increased as production requires. The general superintendent of the plant will be L. B. Peart, of Canton, formerly connected with the Harbison-Walker Co.

Charles Frank, sales manager of the Nelsonville (Ohio) Brick Co., manufacturers of paving block, reports a better feeling in the paving brick market since the weather has improved. While some municipalities and counties are having difficulties in raising money for paving projects, still quite a few lettings are coming off soon. The company, in conjunction with the Hocking Valley Brick Co., has a good stock of brick on its yard, so it is in a position to take care of business. The three plants controlled by the combination are now all active. The plant of the Hocking Valley Brick Co., at Logan, may be turned into a fire brick concern while the two plants at Nelsonville will probably be used for making fireproofing and grinding fire clay. Plant No. 2 at Nelsonville has been making rail brick, a special brick for paving along street car and interurban tracks.

Paving brick producers and distributors of Cleveland and Ohio generally, are watching with interest the outcome of the plan of Governor Cox in ordering the placing at work of convicts from the Ohio State Penitentiary and from the Mansfield Reformatory, on road improvements in Guernsey county. The work is being started on some well-nigh impassable strips in that section of the National Highway. The action by the governor was taken presumably on the alleged claim that labor is so scarce, on account of governmental munitions demands. In all twenty-six miles of road are affected. The prisoners will be paid by the state, and housed and fed in quarters erected near the scences of their work. They will be under the charge of Warden Thomas, of the penitentiary. The move by Governor Cox is also the result of requests from Washington that road improvements should be speeded up, in order to facilitate the transportation of war supplies. Since the need has been so apparent, Governor Cox has succeeded in obtaining eighty miles of paved roads in eastern Ohio.

Oklahoma

Preliminary steps have been taken for the establishment of a buff brick plant at Ponca City, Okla., and it is believed the factory will be in operation before the end of this year. The Ponca City Buff Brick Co., organized recently, has purchased land which is said to contain deposits of shale sufficient to supply raw materials for a number of years and arrangements are now being made for the construction of a railroad spur to the site of the proposed plant.

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Here ***Gandy*** engineers accurately fit ***Gandy***, the original stitched cotton duck belting, to the user's requirements.

You send in the particulars—

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—and **Gandy** engineers will select for you the width and ply belts which will give unvarying satisfaction.

Don't hesitate to put your transmission problems up to the ***Gandy*** Service Department.

No charge is made for service rendered.

Address inquiries to

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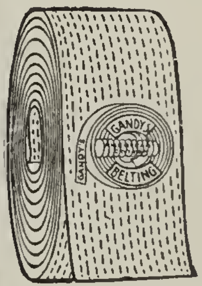
The Gandy Belting Co.



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Samples and price list on request.

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It explains in a short concise way how the "Jones" compels absolutely perfect combustion in your furnace, regardless of the grade of bituminous coal that you are burning.

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Branch Offices in the Following Cities:

New York, Pittsburgh, Philadelphia, Buffalo, Cincinnati, Toronto, Kansas City, Denver, Detroit, Salt Lake City, Charlotte, New Orleans, Boston, Minneapolis, Toledo

Rhode Island

The city of Providence, R. I., contemplates the extension of the sewerage system into eight streets in new sections of the city. The matter is now in the hands of the aldermanic committee on sewers.

South Carolina

The Edisto Brick Company, Orangeburg, S. C., has filed notice with the Public Service Commission of an increase in its capitalization from $5,000 to $10,000, to provide for expansion.

Texas

The Brown Brick Co., 1210 Main Street, Dallas, Tex., which recently increased its capital from $5,000 to $11,000, has completed the installation of additional equipment at its plant. At the present time the works have a daily capacity of approximately 40,000 brick.

An unusually large amount of building activity is now in progress in San Antonio, Tex. It is devoted largely to solving the housing problem. The permits for brick buildings in March included two apartment houses, to cost $26,000; two brick store buildings to cost $11,000, and a brick veneer dwelling to cost $4,000.

Virginia

The Meldetile Manufacturing Co., Cape Charles, Va., has been incorporated with a capital of $10,000 to engage in the manufacture of tile. F. William Melde is president; Edwin J. Smith is secretary.

In an effort to secure the most satisfactory material for repaving Broad street, from Third to Tenth streets, the city engineer of Richmond, Va., has been directed to submit a report to the administrative board as to the advisability of using vitrified brick for this purpose. The original work was done by the Washington Asphalt Block & Tile Co., and as the material used has failed to withstand the wear and tear of traffic as expected, the city officials are determined to make an exhaustive survey for the purpose of obtaining the best material for the repair of this important thorofare.

West Virginia

The Novelty Clay Forming Co., Newell, W. Va., engaged in the manufacture of electric porcelain specialties, has leased the plant formerly occupied by the Ohio China Co., at East Palestine, Ohio, and is planning for the removal of its entire plant to this location.

Canada

W. H. Freeborn has accepted the management of the Ideal Brick & Tile Co., Brantford, Ont.

John Price, Ltd., Toronto, has been incorporated. Provisional directors include Geo. P. Price, C. H. Price, Miss S. J. Price and Mrs. Jane Price.

The Don Valley Brick works was saved by William Burgess, from another flood on March 18 by successful dynamiting of the ice in the Don river.

The Canadian China Clay Co. Ltd., St. Remi d' Amherst, Quebec, shipped their first carload of fire brick to the Canadian Steel Foundries at Welland, Ont., on March 12.

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

Among the Potteries Here and There

The ground is being cleared for the new pottery works of the West Coast Pottery Co., at Burlingame, Cal. The building is to be 350 feet long and in places three stories high, built of brick, wood and iron. W. A. Weiss is the directing head of the company. It is estimated that from 400 to 600 men will be employed when the factory is started. Dishes, tile and plumbing and other kinds of pottery will be manufactured and high-class products will be turned out. The company has bought six blocks of land, including the streets, which are to be closed.

James Shaw, formerly secretary of the Cannonsburg (Pa.) Pottery Co., has severed his connection with that company, and with other associates has located in Trenton, N. J., where he will operate a plant under the name of the Shaw Pottery Co. For some years he was identified with pottery interests in the East Liverpool, Ohio district. He will become president of the new company, which has taken over the former plant of the Morris China Co.

In employing the Lent Traffic Co. of Pittsburgh, Pa., to look after all traffic matters that may arise, the individual pottery manufacturers of the United States Potters' Association have already obtained results. A quicker movement of cars supposed to be lost has resulted, and this has been a source of relief to the manufacturers. The manufacturers have seen the need of assistance in their traffic work, but not until a few weeks ago did the proposition materialize.

The West Virginia Potteries Co., a West Virginia corporation, which has been doing business at Huntington, manufacturing high tension electric porcelain supplies and other clay products, has filed a voluntary petition in bankruptcy in the United States district court in that state. The concern is also interested in an electric porcelain plant at New Lexington, Ohio. The total liabilities of the company have been listed at $18,589; the assets have been placed at $70,863.

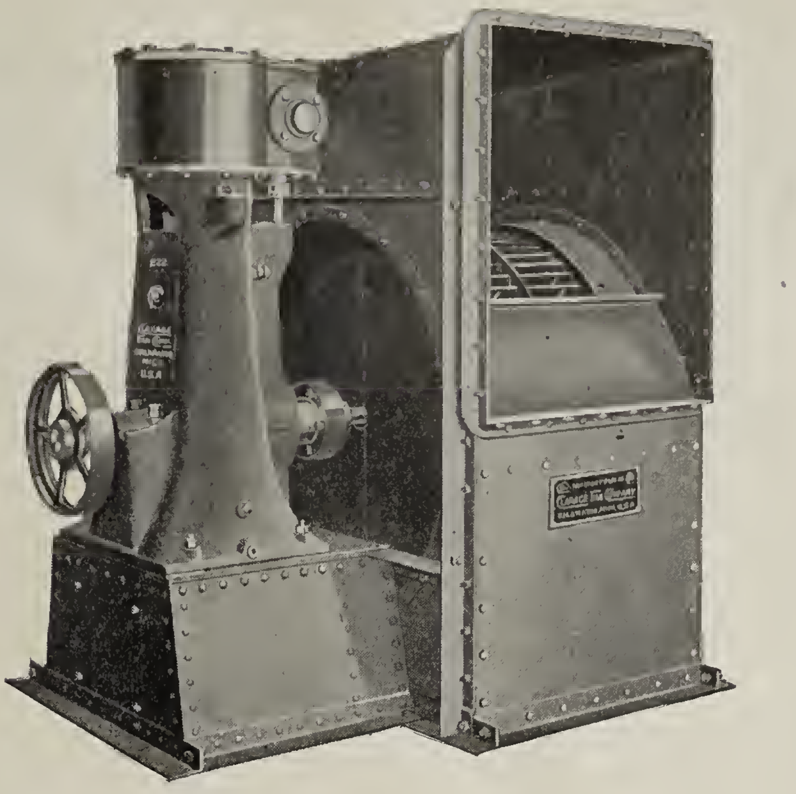
The Smith-Phillips China Co., East Liverpool, Ohio, has let the contract for the erection of a large bisque kiln, construction of which is to start at once. In order to relieve the possible future fuel shortage at this plant the firm is now drilling for gas on its property near the plant. This is the first additional kiln to be erected in the East Liverpool district this season.

Slight damage amounting to approximately $1,000 was caused by fire on March 26, at the plant of the Imperial Porcelain Co., Mulberry Street, Trenton, N. J. A quantity of ware stored in baskets in the basement of the plant was cracked by the heat.

* * *

Dwellings in Spain All of Brick

No one fact attracts the attention of visitors in Spain more than the absence of wooden houses. Dwellings are constructed almost entirely of brick; floors of tile; stairways of concrete or stone and the roofing almost entirely of tile.



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Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
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Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
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Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
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MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

How To Increase Drain Tile Output

Every drain tile man has been confronted numberless times with delay in tile shipments due entirely to the inability of the purchaser to receive shipments as expected.

Oftentimes this delay necessitates double handling of the tile, as the ware must be placed in stock instead of being loaded directly from kiln to car or wagon.

This delay may be met with smiles, if it is not prolonged into an indefinite wait. Even a few instances of this nature places a large quantity of "perhaps orders" on the books that are equivalent to no orders at all.

In past years this condition was due to lack of labor with which to dig the necessary ditches, or to a necessary wait on the traction ditching machine. Without doubt this year will see "History repeating itself" and the biggest, greatest market ever at the disposal of our drain tile plants will be whittled down to a disappointing size—unless means are provided to overcome the difficulty.

At first glance it appears hopeless, inasmuch as so much of our labor is occupied or in the great new army of the United States. But—there remains a substitute that in all cases is better than the original labor—the Buckeye Traction Ditching Machine.

This machine will do the work of dozens, even hundreds of men, and at a fraction of the cost, and the work is done quickly, satisfactorily and perfectly.

It behooves every Drain Tile Manufacturer in the whole U. S. A. to use his time, energy and influence in getting into his neighborhood, a Buckeye Ditcher so that there will be facilities to dig peaceful trenches on the farm of every farmer who is going to drain his farm.

It is advisable to try three methods of accomplishing this, first get a tile drainage contractor to buy a Buckeye, help him financially if necessary; second, get the farmers to band together and buy a Buckeye; third, buy one yourself.

It will mean money in your pocket, relief from worry and a steady running plant. If you will address The Buckeye Traction Ditcher Company in Findlay, Ohio, they will help you make arrangements.

* * *

Screens for Shale and Clay

A great deal of benefit accrues to the plant that does not have trouble with the screening. It is a small matter to stop and fix up the screen, shut down the grinding machinery and perhaps the entire organization behind the screen from pan to pit, but the total loss in a year's time is greater than most plants realize. Keep a record for one month and see for yourself.

The loss in time and in labor, which both contribute to lessened output, is not however the real serious difficulty, which is usually a lowering of the good quality of the ware being produced.

Take, for instance, a screen that has been set for a maximum size of grain, beyond which it is not advisable to go.

If the wires break out, or if they spread due to the wedging of pieces of shale or rock in between the wires, then the percentage of oversize material passing into the mixture is very large and trouble results. Often the leak is not discovered until much coarse stuff has gone thru.

The manifestation is first apparent in the die, if hollow ware is being made, where the pebbles lodge between cores and die sides, tearing the webs, or causing the bar of clay to curl. The next trouble is noticed in broken cutter wires.

Both of these difficulties cause hours of lost time, during which the men stand idle, the spoiled ware piles up, and a regular bad day is experienced.

Difficulties in drying and burning are often included in the unending chain of troubles caused by broken wires or a poor screen, and finally a poor rough piece of ware is produced.

Troubles pyramid when the screen goes wrong, and it is not hard to understand why the clay men are adopting perforated metal screens for this work.

These screens wear longer, it is a practical impossibility to break them, and the screened clay is always of the same uniform size and consequently plans do not go wrong due to inequalities of size in screened material.

The Harrington and King Perforating Company, 635 N. Union Ave., Chicago, Ill., have a series of proofs and catalogs of interest that they will gladly send to interested clay products manufacturers.

* * *

Homestead Valves

"Have you come to the parting of the ways," is the title of an attractive circular just published by the Homestead Valve Mfg. Company, of Homestead, Pa., and, arriving there, have you made the same choice as have hundreds of other large companies whose valve troubles have been ended by the installation of Homestead Valves? The Homestead has been tested, approved, and adopted. On countless plants it is giving unusual service to satisfied customers.

The "Parting of the Ways" and other literature will be sent you on request, so you may know about Homesteads.

* * *

Stanley Belting is Clay Plant Belting

Every feature of the Stanley Woven Cotton Belting is one that makes it particularly suitable for clay plant work—and the features combined truly make Stanley belting clay plant belting.

When given ordinary care, or in other words rolled up when not in use, Stanley belting will not stretch or shrink to exceed two per cent. and this is taken out during the first thirty-six hours of usage; it is absolutely uniform in thickness, it is treated by a compound, which, together with its hinge weave construction, makes it unusually flexible. It has a special selvedge that protects it from edge wear; it is unaffected by extreme heat and uninjured by grease, oil, gases, water or steam; and, being solid woven, it contains no stitches to break thru or plies or laps to pull apart.

It is easy to see the strain that is continually being placed upon the outer and inner edges of a belt. Extreme expansion or pull is exerted upon the outer edges while that portion of the belt passing over the surface of the pulley is contracted.

The Stanley belt neutralizes this strain because of its hinge weave construction, which not only enables it to be bent in any way and immediately to reassume its normal condition, but which also makes it very flexible. Many plants find it especially adaptable for those drives where there is a great difference in the size of the two pulleys because of this feature.

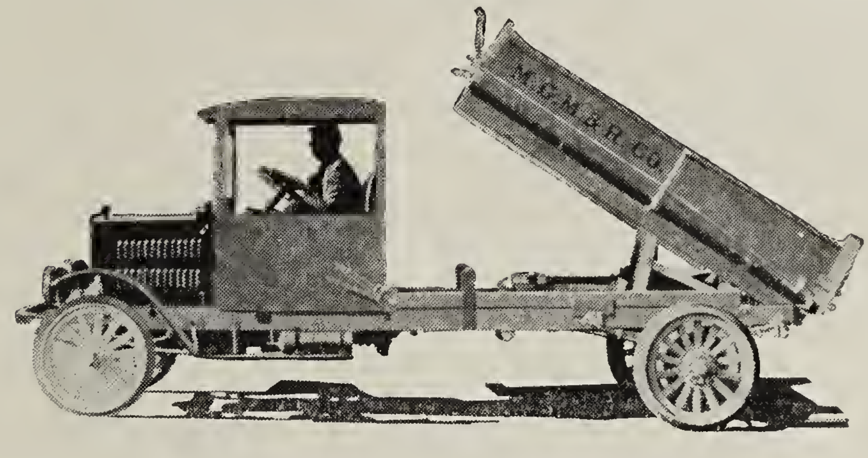
One particularly interesting Stanley clay plant drive is that on a Mason City, Iowa, plant where a belt from a large motor drives a jack shaft operating a pugmill. About the center of the drive the belt is run over a pulley operating a fan for pulling waste heat from the kilns to the clay drying rooms. This belt, altho working under exceedingly difficult conditions, is giving very good satisfaction.

The whole case for the Stanley Belting Co. may be summed up in a short statement of the Badger-Packard Machinery Co., of Milwaukee, a large powerful or-

KISSEL
Five Sizes
TRUCKS

Keep Your Goods Moving

The wider delivery areas, greater hauling distances and closer shipping schedules, due to the present transportation requirements, call for the dependable performance, uninterrupted service and economical maintenance of the Motor Truck.



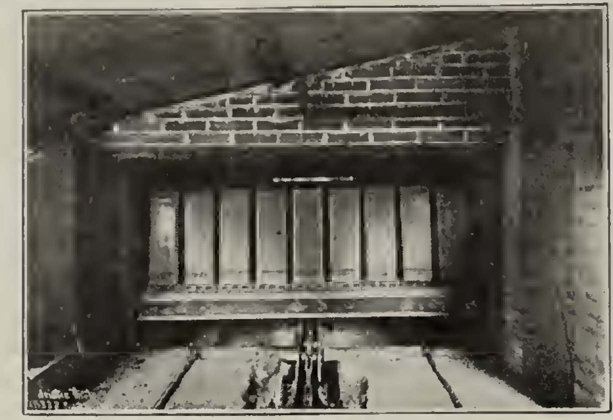
Kissel Trucks meet today's war cry—"Keep the Goods Moving" in a made-to-order fashion. The Kissel-built motor, perfected worm drive rear axles, heat-treated frame, sturdy springs and 10 years' truck building experience, give Kissel Trucks a leadership for solving economically the haulage and delivery problems of owners in the brick and clay industry.

See your Kissel Truck dealer—investigate the ALL-YEAR Cab—an exclusive Kissel feature—early deliveries—order now—don't delay!

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.

KISSEL
With the ALL-YEAR Cab
TRUCKS

SAY "I SAW IT IN" BRICK AND CLAY RECORD



Fire Brick Plants:
Potteries:

Those plants finding speedy, safe drying a necessity, use

"Proctor" DRYERS

They are doing work in every plant where installed, that is not equalled by any dryer—except by other Proctors.

The most modern of ideas has been adopted by some of our greatest plants, because it dries safely, speedily and well.

Address

The Philadelphia Textile Machinery Co.
Sixth Street and Tabor Road
Philadelphia, Pa.

ganization which weighs the words of commendation which it utters, and which in regard to the Stanley belting says:

> "We have used the Stanley Belt for a number of years, and we can say frankly that in our judgment it is absolutely the best fabric belt that was ever on the market."

Stanley Belting is clay plant belting, altho it is giving unlimited satisfaction in practically every industry in the country. It seems to be particularly adaptable to the work of the clay plant because of its qualities of enduring heat, dust and moisture, its flexibility, and its strong, sturdy construction.

⁂

Milwaukee Office for Lakewood

The Lakewood Engineering Company have opened a new branch office in Milwaukee, Wisconsin, in charge of Fred T. Kern and I. N. Young.

Messrs. Kern and Young were formerly connected with Kern, Hunter, Inc., and will have their new business office in the Milwaukee Athletic building.

⁂

Alligator Steel Belt Lacing for Strength

No special tool is required to apply the Alligator Steel Belt Lacing—with a blow of a hammer it is driven into the ends of the belt so firmly and strongly that it will outlast in life the belt itself. Alligator Lacing can be used on light or heavy work, and due to its flexible construction, double grip, and smooth surface on both sides can be made to operate efficiently over small pulleys, over idler pulleys and on serpentine drives. Both for fabric and leather belts the Alligator Steel Belt Lacing is an ideal fastener.

The Bach Brick Company, Chicago, Ill., uses the Alligator Steel Belt Lacing on the hardest drive on their plant and the strength and satisfaction which it has shown upon the seventy-four foot twelve-inch belt driving the brick machine has won the allegiance of this company. And no wonder, for the double grip of the fastener is so strong that it is practically impossible to pull it apart.

If you are in the market for a belt lacing, flexible and strong, which will give steady, dependable and satisfactory service on either your lightest or heaviest drives, on drives running over idler pulleys and serpentine courses, the Flexible Steel Lacing Company, 522 S. Clinton St., Chicago, Ill., will gladly send you detailed information.

⁂

Keystone Excavator, a Light Steam Shovel

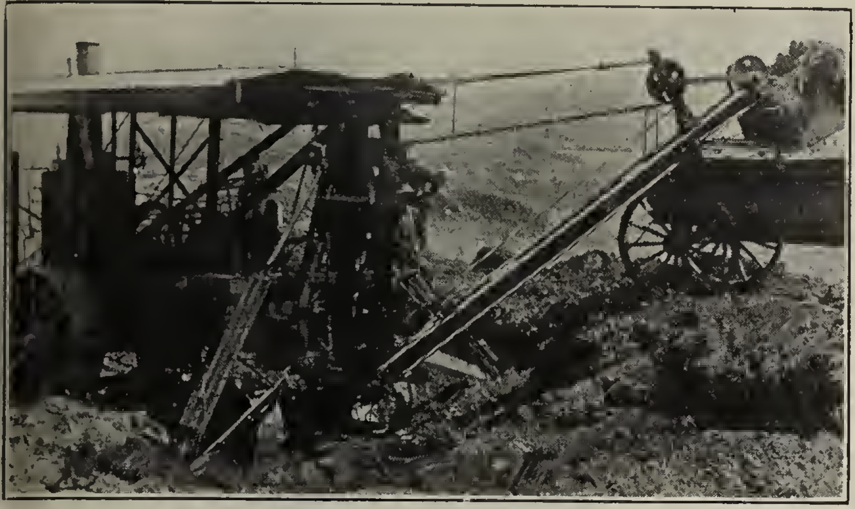
Three distinct purposes can be served by the Keystone Traction Excavator, a light economical general utility steam shovel for use on the clay products plant. By simply rearranging the interchangeable sheaves on the boom, and the tackling to suit, the shovel can be equipped with either a dipper, skimmer, or ditcher scoop, each one of which performs a different function.

For use on plants requiring not more than from 300 to 500 yards of clay a day the Keystone Shovel equipped with a ditcher scoop, of a capacity of ½ yard, is an ideal digging equipment inasmuch as it satisfactorily performs the work of heavier machines and does it both at a lower maintenance cost and at a considerably lower initial outlay for the equipment.

As a steam shovel the Keystone Excavator is capable of cutting into a bank up to twelve feet in height, or considerably higher if the material above will cave in or can be shot down when under-cut. The boom of the Excavator is sixteen feet long, enabling it to load material into clay cars at any point within a half circle thirty-two feet in diameter. The machine is sufficiently strong to handle hard material such as tough fire clay or shale.

Particularly is the Keystone Traction Excavator suited for stripping work. Either the dipper, skimmer or the ditcher scoop can be used for this work. Acting as a steam shovel, the Excavator works back the overburden from the face of the bank, using the top of the bank as a bed for the tracks upon which it and the clay cars operate. The skimmer scoop can be operated on top of the overburden, and is especially designed for shallow cutting. It is mounted on a sixteen foot boom, and has a horizontal crowding movement of eleven feet. It can be used on cuts six inches in depth. In addition to stripping overburden it can be used to dig the clay, taking long shallow cuts over the face of the bank.

The third type of scoop which is a part of the equipment accompanying the Keystone Excavator is the ditcher scoop which is ordinarily used for digging cellars or drainage trenches. It will excavate to a depth of fourteen to sixteen feet. The great value of this attachment for stripping work is easily perceived. It can be operated on *top* of the overburden, which it strips away by reaching over the face and making an upward cut thruout the entire depth of the overburden. In this manner it is always possible to keep the overburden stripped from the face of the clay bank.



Keystone Excavator Stripping Overburden

The Keystone Excavator is without a doubt a machine of great value to clay products manufacturers, and one of little expense. It is light, can be moved around easily, can be made to do heavy work such as digging and stripping, and when necessary used for grading work about the plant and leveling off the cinder pile. If the clay pit is full of water, in a condition under which men *won't work* and machines *can't*, the Keystone Excavator can be placed on top of the bank, and, with the ditcher scoop, operate from a dry position.

* * *

A New Type of Continuous Kiln

The firm of Webster & Kincaid have just introduced an innovation in kilns, two distinct departures being made from common practice.

A continuous down-draft and a continuous muffle kiln have been designed and are an outgrowth of all existing types and methods of burning.

The kilns can be burned either as continuous or as periodical kilns and further, they may be fired with coal, oil, wood or gas.

Complete plans and explanation will be submitted to all questioners by appointment in the offices of the company, Webster & Kincaid, 407 Greenwood Bldg., Cincinnati, Ohio.

* * *

Power Wastage Eliminated by Semi-Trailers

"Power wastage," declares E. F. Hartwick, chief engineer of the Fruehauf Trailer Company, "is a weak point in our industrial system today. On every hand we can see losses that are sapping the profits and increasing costs. It does not always require the services of efficiency engineers to point out these losses resulting from wastage of power. Engineers are putting forth every effort to curtail these losses.

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

Coal Supply?

You will have difficulty in securing the coal necessary to the operation of your plant next spring.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 7c a week ($4.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

1111 MANHATTAN BLDG.
CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

"The use of the semi-trailer in connection with the motor truck is a big step in the conservation of power. By this method we are able to use the tractive forces as well as the carrying capacity of the truck.

"A semi-trailer scientifically built, with anti-friction bearings, reduces the wear and tear on the motor truck to a minimum and increases the truck's capacity threefold.

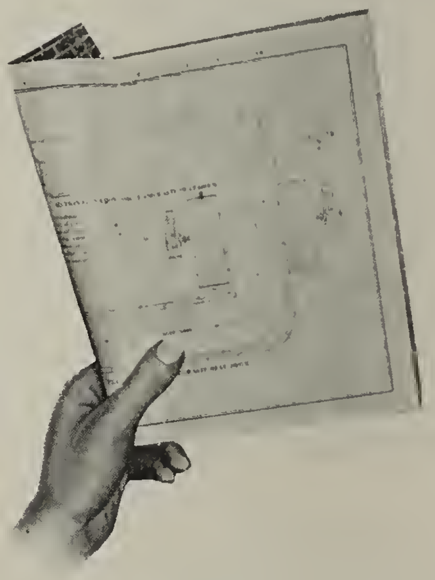
"The interchangeable feature of the Fruehauf Trailer is another step in conservation as it allows for the continuous service of the motor truck while loading and unloading trailers."

* * *

A Stoker for Clay Plants

In one of the most valuable descriptive catalogs that has come into the office lately, the Underfeed Stoker Company of America have completely described and illustrated the use of a mechanical stoker on clay plants.

It has been a habit with the average man to consider that a stoker is a blessing that only the larger plants can enjoy, but in this instance it is shown that the Jones stoker is equally well adapted for use on either large or small plants.



This Book Tells What Jones Stokers are Accomplishing

A list of forty to fifty plants that are using the Jones Stoker, is given and quite a few photographs are included showing the installations on such well known plants as The Alton Brick Company, The Illinois Brick Company, The Macomb Sewer Pipe Company, The Rockwood Pottery, Ohio Valley Clay Company, and others of the same splendid reputation.

So much may be said in favor of a mechanical stoker for either the power plant boilers or for the drier furnaces, that it is impossible to list them here. Suffice to say that the Jones is installed with the understanding that it will burn the cheaper grades of coal at a high efficiency, and a great fuel and labor saving is accomplished.

The catalog, The Jones Stoker in brick and other clay plants, will be mailed to you by addressing The Underfeed Stoker Company of America, Harris Trust Building, in Chicago, Illinois.

* * *

A data booklet has just been published by the Link-Belt Company, on the subject of "Link-Belt Roller Chains". Designed to give preliminary information on recent roller chain developments, pending the revision of its larger catalog, No. 257 Roller Chain Data Book, the roller chain booklet describes in detail the different types of chains. "Roller chains," states the booklet, "are particularly advantageous in automotive and special machinery construction."

* * *

W. D. Richardson is pleased to announce to his friends and to all clayworkers that he has returned to Columbus and has taken personal charge again of the engineering, manufacturing and supply business of The Ceramic Supply and Construction Company of Columbus, Ohio.

He will devote his whole time and attention to this work and will specialize particularly in the drying and burning and in the construction and operation of continuous kilns and gas producers.

BRICK *and* CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

Fuel Curtailment

AS WILL BE SEEN from a perusal of the pages immediately following in this issue, Fuel Administrator Harry A. Garfield has issued the contemplated orders curtailing the production of nearly all classes of clay products.

The provisions of the orders are, in the main, the same as was predicted in the March 26 issue of *Brick and Clay Record,* following the conference at Washington on March 13, between the editors of *Brick and Clay Record,* A. V. Bleininger, ceramic chemist, United States Bureau of Standards, Pittsburgh, Pa., P. B. Noyes, chief of conservation, United States Fuel Administration, and his assistants. It will be remembered that the editors of *Brick and Clay Record* were present at this conference at the request of Mr. Noyes, the resulting exchange of opinions at that time taking the form of the fair and favorable orders now issued.

Contrary to our advice, the manufacturers of drain tile will be restricted twenty-five per cent. instead of being granted immunity. This, however, it is believed, will not work any hardship upon the makers of that ware nor will it materially interfere with the production of food since it is admitted on all sides that there is a generous stock of drain tile on hand to take care of present needs. Moreover, if the tile factories operate to seventy-five per cent. of the average three year production, as they can, it is believed that all anticipated requirements can readily be handled.

Vitrified glazed sanitary sewer pipe, it will be noted, has been given an extra twenty-five per cent. in production. Sewer pipe manufacturers showed Mr. Noyes that twenty-five per cent. reduction would work an amazing saving in fuel and transportation. Convinced that such reduction would be a highly satisfactory saving from the Fuel Administration's standpoint, Mr. Noyes decided to raise the allotment to seventy-five per cent. covering this and allied commodities such as flue lining and wall coping.

Attention is called to the fact that clay products manufacturers will be obliged to make certain reports to the United States Fuel Administration on June 30, also August 1, 1918 and February 1, 1919. The article appearing on the following pages will give further detailed information covering this point. It is presumed that these reports will serve the purpose of checking up to see what effect the orders are having on the ability of the industry to take care of its business.

It is evident that silo tile will be exempted from any restricting order. The exemption of fire brick and refractories has been taken as a matter of course.

An examination of the typical order covering common brick, which is reprinted on page 764 of this issue, will reveal the fact that the orders are not ironclad. That is, if it is necessary, permission will be given to plants to operate to more than the allotted capacity in order to take care of the business being offered, as well as government requirements. In connection with this last mentioned point, we believe the hope of the industry in 1918 lies in its ability to supply some of the government requirements in the way nection with this last mentioned point, we believe the recognition by the government of the importance of clay products in the present crisis are increasingly favorable.

The new federal housing code drawn up by Lawrence Veiller, secretary of the National Housing Association, comment on which appears on page 787 of this issue, is an encouraging step in the right direction.

Manufacturers of clay products need to spend most of their energy these days in impressing upon the minds of proper government officials the reasons why clay products should be used in the huge war building program now under way.

In conclusion let it be said, for the benefit of those who have been inclined to discredit by word of mouth or in print the forecast of the Fuel Administration's action with regard to the restriction of production of clay products as published in the March 26 issue of *Brick and Clay Record,* that the orders as now issued demonstrate the fact that the forecast, with two minor exceptions, is absolutely correct. Since a reduction in the consumption of fuel in the industry was rumored early in the year, *Brick and Clay Record* has endeavored to give its readers the exact situation from fortnight to fortnight. We leave it to our readers to judge, in the light of the Fuel Administration's announced intentions and definite orders, whether or not the discussion has been "con" or "much ado about nothing." If the decision of the Fuel Administration is fair to itself and the clay products industry, it is in spite of these camouflage artists and not because of any constructive work which they did.

* * *

Can You Help In This Case?

IN THE INVASION of Belgium by the Germans, many valuable records and much engineering data in the library of Ponts et Chaussees at Brussels was either lost or destroyed.

The Minister of Agriculture and Public Works at Brussels is anxious to restore and complete the library of his department, and in this connection has asked if it is possible to secure a complete file of *Brick and Clay Record* to date. We cannot supply such a file, since we only have one set of volumes, which, naturally, we do not wish to dispose of.

If any of our readers, who have been preserving *Brick and Clay Record* for the past twenty-five years, wish to part with their bound volumes, the Editor would be glad to hear from them. These volumes are desired in connection with plans now being made for the reconstruction of Belgium. This is an opportunity for someone, in a position to do so, to render valuable aid and assistance to the Belgian government and get in a good word for burned clay.

We have offered to send the Belgian Minister of Agriculture and Public Works, free of charge until after the war, all future copies of *Brick and Clay Record.*

⁂

The Government's Housing Program

IT IS EVIDENT that as the government's housing program develops from day to day, it is becoming more and more interesting to clay products manufacturers.

It was at first feared that most of the houses to be erected by "Uncle Sam" in connection with war work would be of frame or other flimsy construction, calling for little or no brick or hollow building tile. The wooden buildings erected on Hog Island, near Philadelphia, did not add much encouragement.

Now, however, the Housing Committee of the Federal Department of Labor has published standards for war housing compiled by Lawrence Veiller, secretary of the National Housing Association, further details of which are given on another page of this issue. Clay products are given a prominent place in what will be in effect a federal housing code. It is stated that these standards are not intended to be inflexible, but any plans which fail to conform to them are not likely to be accepted unless supported by very strong reasons. This is certainly favorable.

It might be mentioned in connection with sums which it is proposed to spend for houses this year, that two different governmental departments have a total of one hundred million dollars in actual or prospective appropriations. This is a lot of money to spend for houses in a year, and if clay products are as generously used as the specifications seem to indicate, there is little doubt as to what it will mean to the industry.

In addition to its housing program, the government will spend at least three hundred million dollars for other emergency construction under the direction of Major W. A. Starrett. This appropriation covers many types of buildings, several of which will be erected at interior points. To date war business, so far as building brick and hollow tile manufacturers are concerned, has been rather unequally distributed. It is, however, becoming more and more evident that the government must get away from the Atlantic sea-board with its war work and divert a portion to the Middle West and West where railroad congestion is not nearly so serious as it is in the East. Chicago is rapidly coming to the front as a center for war work and it is believed that other inland points will also be chosen by the government for ship building and munitions manufacturing. If this develops, it will mean that the orders for brick and tile will be much more generally distributed.

⁂

An Outrageous Tax On Education

DO YOU WISH to put a tariff on intelligence? Do you want to levy a tax on education? Congress does. Your Congress. What! You didn't know about it! Read:

At the last session Congress passed a law which establishes a postal "zone" system for magazines and periodicals. It passed a law increasing the postage on periodicals to you, the readers of this publication, from 50 to 900 per cent. And it did it by re-establishing a postage "zone" system that was abolished by President Lincoln in 1863. Instead of a flat rate, made as cheap as possible in order that there could be a chance for the intelligent consideration of public questions to reach the farthest limits of the country and the most remote habitation on an equal basis, the magazines containing all this discussion and all the best fiction and all the best art must hereafter pay an excess rate like so much fish or canned lobster or fabricated steel.

You are going to buy your education by the pound-mile now. It isn't a free flowing stream from which all may drink. It has been dammed and its flow checked. Congress did it. If it would bring any increase to the revenues of the country that would amount to anything, it would never be opposed. But it won't. It will drive magazines out of business.

We wouldn't say that the discussion of public questions in the magazines, which sometimes call attention to the delinquencies of Congress and public officials, resulted in the enactment of this law. We would not say that it is a form of censorship that is really prohibited in spirit by the Constitution, altho the law has been so cleverly drawn that it probably cannot be called unconstitutional. We will not say that about it, altho we could. We simply call your attention to it because we don't believe you know it. And further than that, we don't believe you'll stand for it.

Write to your Congressman about it. And demand the repeal of this particular passage.

Lend—Don't Waste—Your Money. Buy Liberty Bonds.

GARFIELD ISSUES FUE

Production of Face, Common, Paving Brick, Architectural Terra Cotta, Roo
ing Tile, Sewer Pipe, and Allied Products, Twenty-five Per Cent., and Stonew

THE United States Fuel Administration issued on April 17, regulations approved by the War Industries Board restricting the manufacture of clay products and re-arranging and dividing the manufacturing program of this industry in such a way as to place it on a war basis.

CURTAILMENT FROM 15 TO 50 PER CENT.

Ten orders covering various clay products were signed by Fuel Administrator Harry A. Garfield, the percentage of curtailment being as follows:

Face brick, common brick, paving brick, architectural terra cotta, roofing tile, floor and wall tile and sanitary ware, fifty per cent.; hollow tile, drain tile, wall coping, culvert pipe, flue lining and sewer pipe twenty-five per cent., and stoneware (excepting chemical) fifteen per cent.

A special order was issued for each different product or group of products but the various provisions of the orders are practically the same. For the convenience of our readers the order covering common brick, which is typical, is reproduced on page 764 of this issue and merits close study.

In speaking of the curtailment of fuel in the clay products industry the Fuel Administration states with particular reference to the percentage of restriction "these figures have been reached after careful investigation and represent rates of production which will be for the best interests of the necessary government work and in general for the interests of the manufacturers involved.

U. S. PLANS TO USE EXISTING FACTORIES

"The experience of the last year has brought two facts clearly to the front. First, that as far as possible the new war work must be put into old factories to take the place of less essential production. This method of producing war supplies prevents building problems, housing problems and transportation problems which necessarily follow the setting up of new plants for war production. Second, that in addition to this transference it will be necessary for many industries to make deliberate sacrifices of a part of their ordinary business in order that there may be transportation, men and materials enough for war production.

"The War Industries Board and Fuel Administration have been for several months obtaining information which would enable them to reorganize lesser essential industries, such as building materials, which tax transportation facilities and fuel supplies to the largest extent.

"The Bureau of Standards and experts associated with each industry have placed their services at the disposal of the Government and have aided in reaching conclusions.

In general the minimum basis of running for the year has been established in each class of clay products. This minimum has taken account of the more necessary requirements outside of strictly war activities as well as the necessities of the Government. Beyond this, it is arranged that whenever the Government Departments certify requirements in any of the divisions exceeding the productive capacity of a given district on the minimum basis, such facts will be certified to the Fuel Administration and permits for additional running will be issued.

EQUAL TREATMENT FOR ALL INTENDED

"The aim has been to conserve the larger interests of the trade involved. Equal treatment for all plants is provided wherever possible. Allowance, however, is made in the plan for recognizing individual instances where an abundance of fuel and absence of congestion make it desirable that a large proportion of production be permitted in a given district. The granting of such additional output has been hedged about with safeguards so that general conditions in the different trades will not be seriously affected."

In the order covering face building brick, it is stated that the term "face brick" in this regulation shall be construed to cover building brick intended to be used solely for facing purposes, as differentiated from common building brick, made by any process whatsoever.

The order covering common building brick, the restricting mandate says, shall be construed to cover all common building brick made by any process whatsoever. It is logical to assume that this includes sand-lime brick.

The term "paving brick or block" in the order concerning that product is to be construed to cover paving brick or block intended to be used for the paving of roadways and streets and other paving purposes, made by any process whatsoever.

The term "terra cotta" in the regulation covering that material is to be construed to cover all architectural terra cotta, whether glaze or unglazed, intended to be used for the interior or exterior construction or decoration of buildings, made by any process whatsoever.

It is seen upon examination of the order with regard to roofing tile, that the term "roofing tile" shall be construed to cover clay tile, whether glazed or unglazed, intended for use in the covering of building roofs, made by any process whatsoever.

By the term "floor and wall tile" in the regulation covering that product is meant all clay tile, whether glazed or unglazed, intended for use in floors or walls and for other utilitarian or decorative purposes, made by any process whatsoever.

The term "sanitary ware," so far as the curtailment covering that commodity is concerned, is to be construed to cover all burned clay ware used in plumbing installations made by any process whatsoever.

The term "hollow tile" in the regulation covering that commodity is to be construed to cover all forms of fireproofing or hollow building brick, except silo tile which are used in the erection of floors, roofs, partitions, and for other constructional purposes, made by any process whatsoever.

CEMENT PIPE ALSO CURTAILED

The term "sewer pipe, drain tile and flue lining," it is

URTAILMENT ORDERS

Floor and Wall Tile and Sanitary Ware Cut Fifty Per Cent.; Hollow Build-
pt Chemical, Fifteen Per Cent. From Average Output of Past Three Years

stated, shall be construed to cover all vitrified clay, cement or concrete, sanitary sewer or culvert pipe, in size forty-two inches in diameter or under; all vitrified or nonvitrified clay, cement or concrete drain tile; and all clay, cement or concrete wall coping and flue lining made by any process whatsoever.

The term "stoneware" in the regulation covering that commodity shall be construed to cover vitrified and glazed receptacles and containers made from common paving brick clays, by any process whatsoever, excepting stoneware used in the chemical industry.

ENAMELED IRON COVERED BY ORDER

Fuel Administrator Garfield also issued an order on the 17th, dealing with the production of enameled ware. The reduction in this case is fifty per cent. The term "enamel sanitary ware" in this regulation shall be construed to cover all enamel iron ware used in plumbing installations, such as bathtubs, bowls, sinks, tanks and so forth, made by any process whatsoever.

ORDERS PRACTICALLY SAME AS PREDICTED

The details of the various orders are almost the same as was predicted in the March 26 issue of *Brick and Clay Record*. It is the additional features that are noteworthy. It might be mentioned that the production of drain tile has been restricted twenty-five per cent., while it was originally planned that this commodity should suffer no curtailment. On the other hand, the manufacturers of sewer pipe, wall coping, flue lining and culvert pipe have been granted an additional twenty-five per cent., making their total allowable production seventy-five per cent. of the average of the past three years instead of fifty as had been previously announced.

MANUFACTURERS MUST MAKE REPORTS

A feature especially worthy of mention is the second to the last paragraph of the order, which reads to the effect that on or before June 30, 1918, each manufacturer of the various commodities involved in the restricting orders shall report to the United States Fuel Administration the quantity of brick manufactured and the amount and kind of fuel consumed during the period from January 1, 1915,, to December 31, 1917, and the amount of stock on hand December 31, 1917. It also orders that thereafter semi-annual reports showing the number of common building brick produced, the amount and kind of fuel used and the stock of brick on hand, shall be made for the period of January 1, 1918, to June 30, 1918, and July 1, 1918, to December 31, 1918. The report for the first period is to be made not later than August 1, 1918, and for the second period not later than February 1, 1919.

The orders covering the manufacture of burned clay sanitary ware and enamel iron ware are different from the rest of the orders in that nothing is said with regard to pooling, change of character of product, or permission for increased operations by presentation of evidence showing need thereof. In other words, the manufacturers of these commodities are allowed no exceptions. Otherwise, the orders covering these two classes of products are the same as the others.

⁂

Government Storage Depot at Columbus

With the announcement from Washington that appropriations had been made for the erection of a number of government storehouses, the large storage plant, which has been contemplated on a tract of 175 acres east of Columbus, Ohio, is now assured. There has been considerable rumor about the project but according to army officers the work of construction will start soon. It will be the largest storage depot of any in all the country and will be located on the trunk lines of the Pennsylvania and Baltimore & Ohio. Spurs from other trunk lines will also reach the depot.

The plans, according to Major Albert Miller, contemplate the erection of six buildings, each 80 by 1,500 feet, and also a barracks building comprising more than 800,000 square feet of floor space. Four of the large buildings will be constructed of brick and two of steel. They will be designed so that enlargements can be made at any future time.

The buildings will be located parallel to each other, with a double railroad track between. The contract will be awarded soon. It was rumored that a Cleveland firm has been given the contract, but protests from Ohio representatives and senators caused the statement to be made that the contract has not yet been placed. Columbus contractors are now figuring on the work. It is claimed that several millions of brick will be used in the construction of the brick structures, also that thousands of dollars' worth of fireproofing will be used in the storage depot.

Construction will start as soon as the contract is awarded and 3,000 men will be employed. It is expected to complete the building in three months' time. After the depot is completed a force of several hundred soldiers will be kept on duty as guards. A force of 500 civilian employees will also be used.

The location of the storage depot in Columbus means that all war goods manufactured for all branches of the army north of the Ohio river and east of the Mississippi river will be brought to the Buckeye capital for storage. The goods will be shipped to the seaboard as they are needed. The depot will put Columbus and Ohio manufacturers of war materials closer to the war department.

While built with the idea of permanency, it is not announced whether the buildings will be continued for war purposes after the war. They will be constructed, however, with the idea of being used for manufacturing purposes if needed.

ON NEXT PAGE
is fuel order covering common brick. This is typical of orders issued covering other products.

TYPICAL ORDER

(See Pages 752 and 753.)

UNITED STATES FUEL ADMINISTRATION

Washington, D. C., April 13, 1918

ORDER ESTABLISHING A REGULATION TO RESTRICT FUEL CONSUMPTION BY THE MANUFACTURERS OF COMMON BUILDING BRICK

It appearing to the United States Fuel Administrator, after consultation with the Chairman of the War Industries Board, in view of the necessity for conserving the country's resources for the prosecution of the war and in consideration of the increased demand for fuel for industries engaged in the production of munitions and commodities required in the conduct of the War, and the fact that owing to the limitations upon transportation facilities and other causes resulting from the War, there is an insufficient supply of fuel for those purposes and also for all the other purposes existing in normal times, that it is essential to the national security and defense for the successful prosecution of the War, and for the support and maintenance of the Army and Navy, to restrict the consumption of fuel in certain lines of industry; and that among such industries is that of the manufacture of common building brick, as defined in the regulation hereinafter prescribed; and the United States Fuel Administrator hereby finding that the restriction of fuel consumption to the extent specified in said regulation is reasonable, and that the limitation consequent upon such restriction, in the production of such common building brick during the present War, will not seriously impair or jeopardize the future efficiency of the industry for producing such common brick; and that such restriction will contribute to the successful outcome of the war thru the releasing of fuel and other resources for war purposes, and will result, with other limitations upon the use of fuel in various other lines of industry thru the establishing of similar regulations, in an equitable distribution and apportionment of fuel among consumers in accordance with the relatively essential nature of their products to the prosecution of the war;

The United States Fuel Administrator, acting under authority of an Executive Order of the President of the United States, dated 23, August, 1917, appointing said Administrator, and in furtherance of the purpose of said order and of the Act of Congress therein referred to and approved August 10, 1917,

Hereby makes and establishes the following regulation, effective until further or other order, and subject to general or specific modification hereafter from time to time and at any time:

REGULATION RESTRICTING FUEL CONSUMPTION BY MANUFACTURERS OF COMMON BUILDING BRICK.

The term "common building brick" in this regulation shall be construed to cover all common building brick made by any process whatsoever.

The term "manufacturer" in this regulation shall be construed to cover any person, firm, association or corporation engaged in the manufacture of common building brick.

No manufacturer, as defined above, shall at any of his plants, consume, burn or use fuel of any description, including coal, coke, fuel oil, natural gas or other petroleum products, or use power derived from any such fuel, for or in connection with the manufacture of common building brick, as above defined, during the year beginning January 1, 1918, and ending December 31, 1918, to an amount in excess of fifty per cent. (50%) of the average annual amount of fuel consumed at such plant for or in connection with the manufacture of common building brick during the period from Jan. 1, 1915, to Dec. 31, 1917, excepting,

First: In case such plant was not in existence on January 1, 1915, then and in such case the period during which it has been in existence prior to January 1, 1918, shall be used as a basis in arriving at a determination as to the quantity that would constitute one-half of the average annual production:

Second: That manufacturers of common building brick may burn fuel for the manufacture of common building brick in excess of the amount provided for in this order whenever permission in writing for such excess production is granted by the United States Fuel Administration to any manufacturer.

(a) Upon evidence that the necessities of the government in the particular district in which such manufacturer is located cannot be supplied by plants within practical shipping distance of the place where the United States Government requires such product, unless permission is granted for such excess production, and that on this account it is necessary in the interest of the U. S. Government that such permit be issued.

(b) Upon receipt of certification from the Fuel Administrator of the State in which the plant is located that the material to be manufactured is to be used in connection with building operations of urgent public necessity and that the fuel used in manufacturing such material can be spared.

Third: That whenever two or more manufacturers of common building brick shall find that a further fuel economy would result from combining the output of two or more plants, then and in such case it shall be permissible, after receiving written permission from the Fuel Administration, for the several manufacturers to combine the aggregate allotment of fuel to the several plants, to be used jointly for the purpose of production; the manufactured products of such combined plants being distributed to the individual manufacturers, as may be agreed between them.

In plants which manufactured common building brick exclusively during the years 1915, 1916, and 1917, manufacturers shall not consume, burn or use fuel to manufacture clay products other than common building brick without first presenting evidence that the manufacture of such other clay products is in the interest of the United States Government and receiving from the United States Fuel Administration permission in writing to manufacture such products.

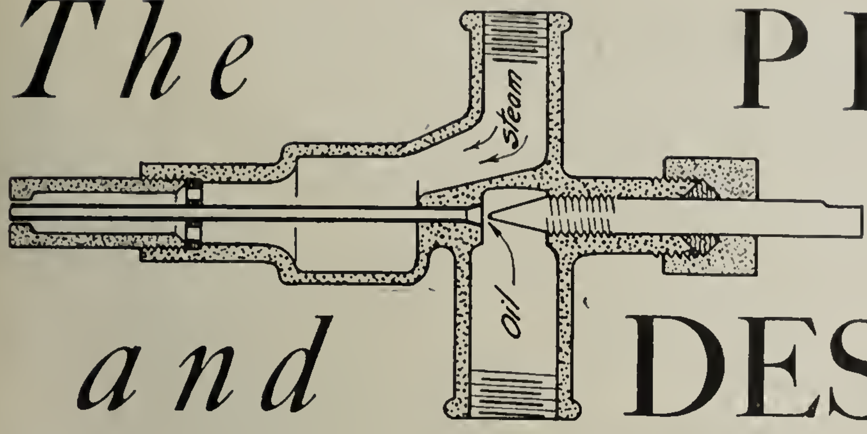
It is ordered that on or before June 30, 1918, each manufacturer of common building brick shall report to the United States Fuel Administration the number of common building brick manufactured and the amount and kind of fuel consumed during the period from January 1, 1915, to December 31, 1917, and the amount of stock on hand December 31, 1917, and that thereafter semi-annual reports showing the number of common building brick produced, and the amount and kind of fuel used, and the stock of brick on hand, shall be made for the period from January 1, 1918, to June 30, 1918, and from July 1, 1918, to December 31, 1918. The report for the first period shall be made not later than August 1, 1918, and for the second period not later than Feb. 1, 1918.

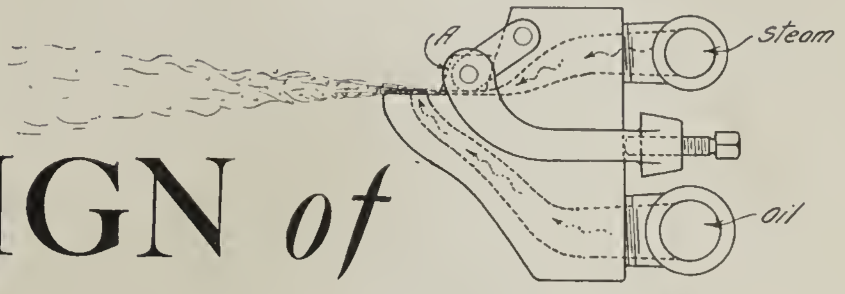
Any such manufacturer violating or refusing to conform to the above regulation will be liable to the penalty prescribed in the aforesaid Act of Congress.

(Signed) H. A. Garfield, United States Fuel Administrator.

You Have a Liberty Bond? Well, Buy Another!

The PRINCIPLES *and* DESIGN *of* CERAMIC BURNERS





Nearly Every Manufacturer Using Oil or Gas Burners Has Had Trouble With Them at Some Time or Other. This Article Deals With the Principles of Burners and Gives Valuable Information About Them

By Carl B. Harrop

Professor of Ceramic Engineering, Ohio State University,
Columbus, Ohio

AT VARIOUS TIMES in the past, plants favorably situated with regard to source of supply have found general economy in the use of gas or oil over solid fuel. With the price of fuel oil at say sixty-five cents per barrel or natural gas at eight cents per thousand cubic feet, the bare cost of these fuels for kiln burning was less in many instances than the cost of solid fuel necessary to accomplish the same heat work. Furthermore, considerable of the operating expense incident to the use of solid fuel was eliminated; the kiln yards could be kept in far better condition (a point not to be overlooked), and in the case of a new installation, the kiln yard layout could be made more compact.

In the rather recent past, however, rapid changes in conditions over the country have more than quadrupled the price of fuel oil, and furthermore the amount available falls far short of meeting the demand.

In the case of natural gas, the general serious shortage of coal during the past winter resulted in a heavier use of natural gas for domestic purposes and a withdrawing of the supply from manufacturing establishments. However, unlike the case of fuel oil, warmer weather and the movement of more coal will again make natural gas available for factories, at least during the summer months.

In some localities, where the gas supply is insufficient or possibly not available during the winter months, it has been the practice to use the gas during the warm weather and then change over to coal during the winter months. This is not unreservedly to be recommended, as not only will furnace changes have to be made, but with these changes there is bound to be temporarily more or less unsatisfactory burning results in the natural course of the readjustment to the use of the new fuel.

The natural procedure in selecting a fuel for any purpose would be to adopt that one which will cost least per unit of product, provided there are no serious drawbacks to its use in the particular case. This comparison of costs should not be on the basis merely of how many heat units can be bought for a dollar, but should take into account the efficiency at which these heat units can be made use of, the cost of storing and distributing the fuel and the depreciation and repairs on the installation.

LIQUID FUEL

There are several kinds of liquid fuel, which may be used in furnaces and kilns: first, crude (petroleum) oil, supplied by a few of the states, but principally from the South and Southwest and also from Mexico; second, fuel oil, being the residue from crude oil after having its lighter or volatile oils, (benzine, gasoline and kerosene) distilled off: third, oil tar, a by-product from certain gas

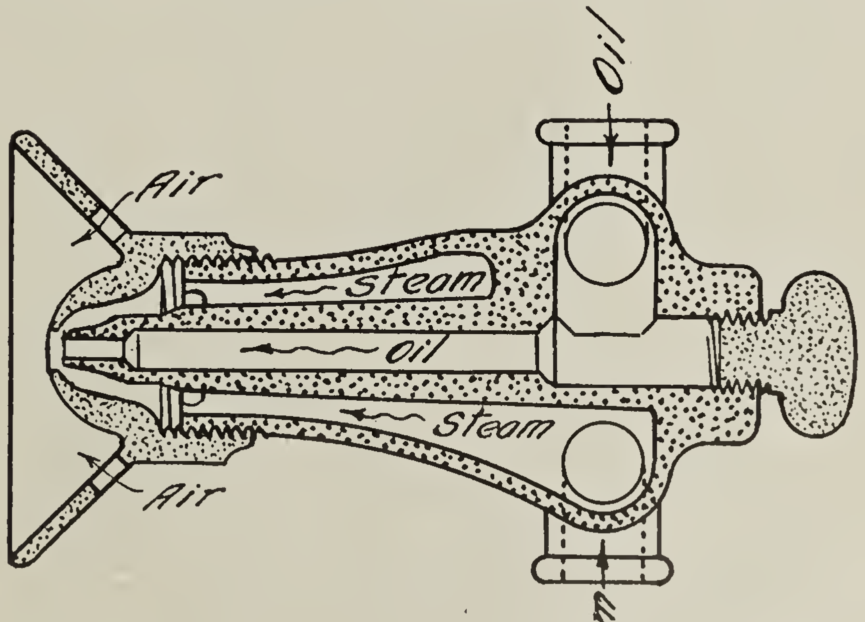


Fig. 2. This Oil Burner is Similar in Construction to Fig. 1 (in Title) Except That the Needle Valve is Omitted.

Editor's Note—The cut on the left hand side of the title is referred to in the article as Fig. 1, while the cut on the right is Fig. 3.

works and fourth, coal tar, a by-product from coke ovens and gas works.

The average heating values of liquid fuels are approximately as follows:

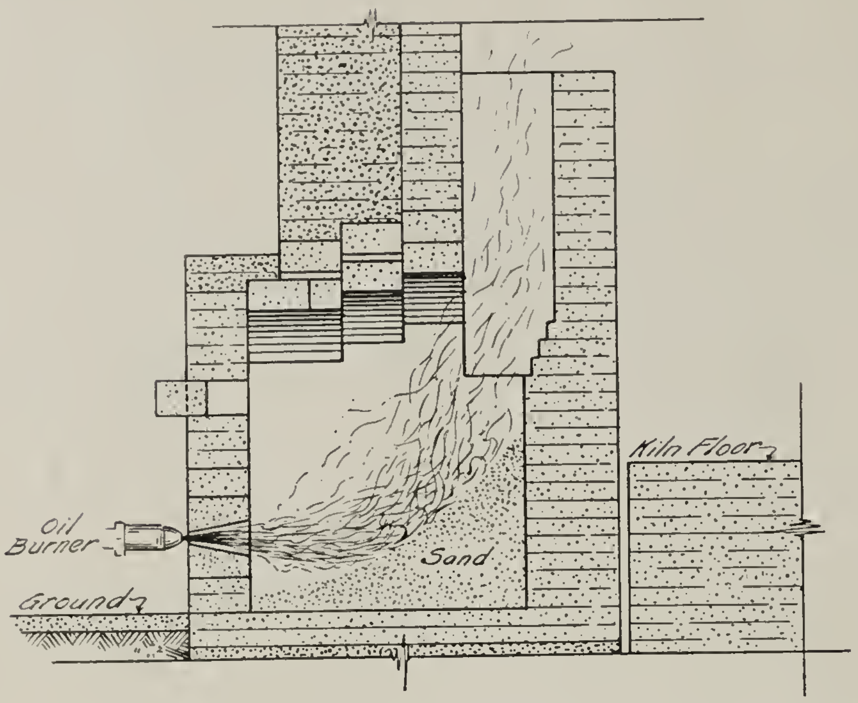


Fig. 4. The Use of Sand Piled in Back of the Furnace Protects the Lining from the Cutting Action of the Flame.

Crude oil	19,000 B. t. u.	Weight per Gal.	7.5 lbs.
Fuel oil	18,500 B. t. u.	Weight per Gal.	7.3 lbs.
Oil tar	17,000 B. t. u.	Weight per Gal.	9.5 lbs.
Coal tar	16,250 B. t. u.	Weight per Gal.	10.0 lbs.

On the basis of the heat work that can be accomplished in a ceramic kiln, 3½ barrels of fuel oil is generally considered as equal to one ton of average quality bituminous coal. This is in the ratio of 20,500,000 B. t. u. in oil to 26,000,000 B. t. u. in coal.

OIL BURNERS

To secure the highest efficiency with liquid fuel, it is essential that the liquid be broken up into a spray of finely divided particles, or in other words, atomized. This is the prime purpose to be accomplished in the use of an oil burner and the burner which can effect a high degree of atomization, which has few parts and is simple in construction, which is capable of a fair amount of adjustment, which has its inner parts accessible for cleaning, that is the one to be desired.

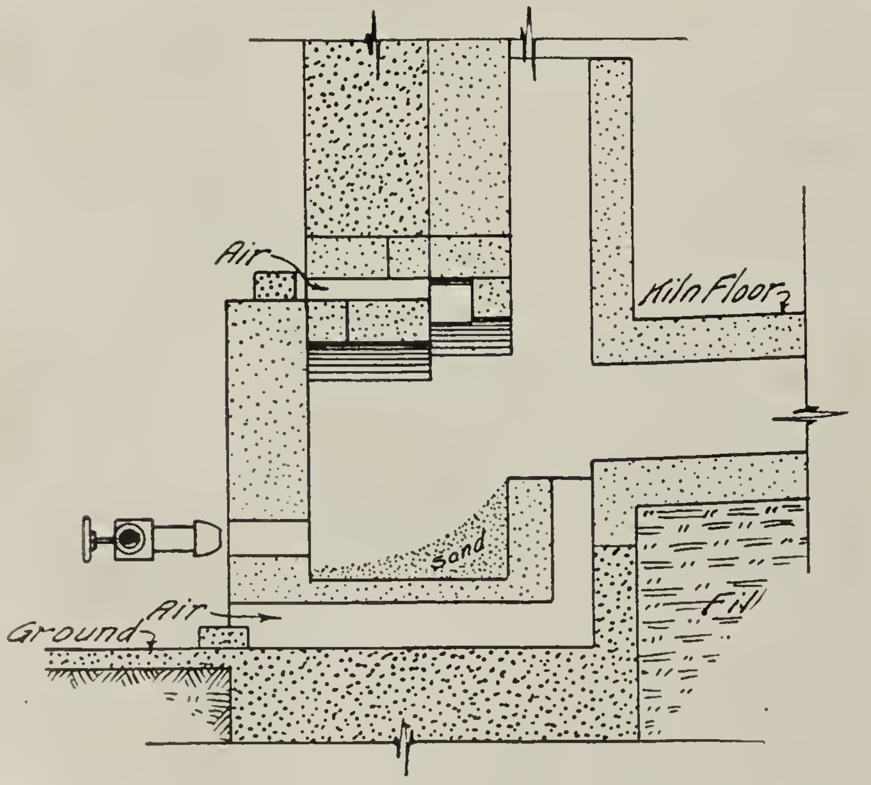
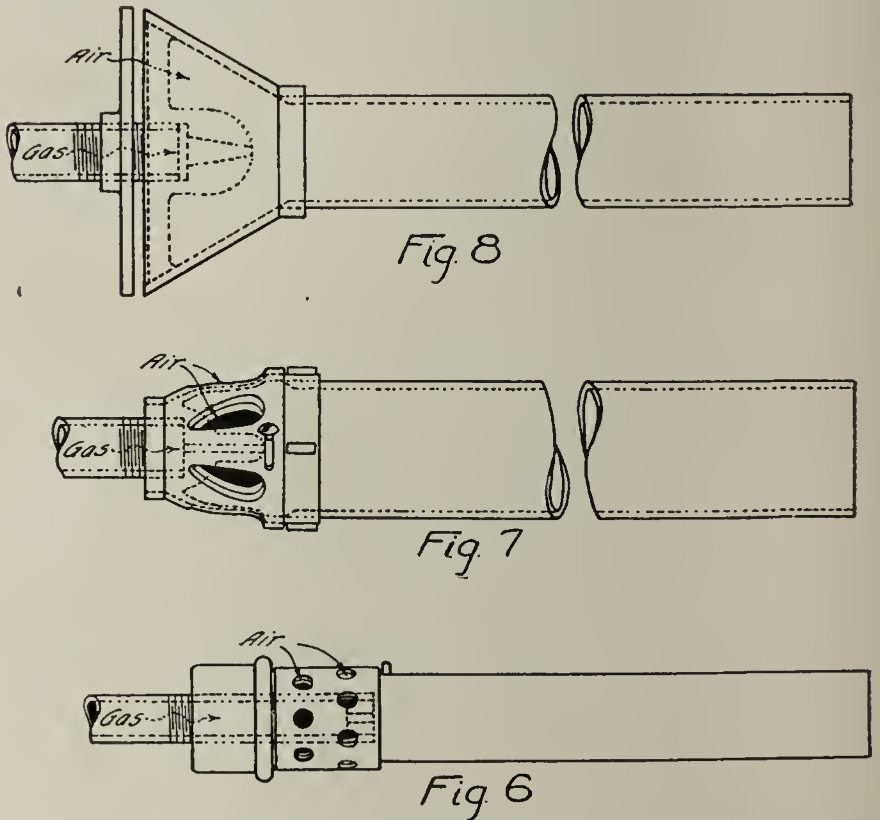


Fig. 5. Showing the Application of Oil Burning Equipment to the Ordinary Pottery Furnace.

"Home-made" oil burners are sometimes found in use. These may be made from a globe valve with certain alterations, or they are made up from ordinary malleable pipe fittings. While this is perfectly possible, none but a man who thoroly understands both the theoretical principles and the practical requirements of oil burner construction should attempt it.

The atomizing agent may be dry steam or compressed air,—the former being desirable for high temperature work, since the steam will be at a temperature of 250 deg. to 300 deg. Fahr. (depending upon the pressure), while compressed air when released at the burner tip will tend to drop in temperature quite a few degrees below atmospheric temperature. Furthermore, when steam is used, it is necessary only to connect with the steam main from the boiler, while with air, it will be necessary to install one or more compressors and actuating equipment.

While there have been granted hundreds of patents on oil burners in this country, practically all can be placed in three classes; first, high-pressure burners, in which the air or steam is supplied at from 15 to 50 lbs. pressure at the burner and oil at any pressure, which will cause it to flow, up to 20 lbs. (depending upon the design of the burner); second, low-pressure burners (known also as volume air burners), using air pressure from a few ounces up to 5 lbs. or so and oil from a relatively low pressure up to 50 to 60 lbs. at the burner (again depending upon its design); third, injector type or mechanical burner, in which there is no atomizing agent employed and the oil is carried at 80 to 100 lbs. pressure or even considerably higher in some cases.



These are Three Different Designs of Natural Gas Burners Equipped With an Adjustable Mixer or Air Inlet, Giving a Combustible Mixture at the Tip of the Burner.

HIGH PRESSURE TYPE OF BURNER

The high-pressure type is the one generally used for ceramic kilns. In some of these burners (Fig. 1), the oil is introduced thru a central tube, the flow being controlled by a needle valve at the outer end. The air or steam fills the space around the oil tube and leaves the tip of the burner in the form of a hollow cylinder, picking up the oil as it flows out of the end of the tube and dashing it into fine particles.

In another make of this type of burner (Fig. 2), the needle valve is omitted and in its stead is inserted a large screw plug, which can be removed if the oil tube clogs, permitting of a thoro cleaning out of the tube. In this case the oil can, of course, be regulated or cut off by an intermediate globe valve, between the burner and the supply line. On this type of burner there may be an adjustable tip, by which it is possible to vary the velocity of the air or steam, i e. by partly closing the valve supplying the burner and screwing the tip out, the velocity is made low, while if the valve is opened wide and the tip screwed back toward the body of the burner, the full air or steam pressure is exerted back of a greatly restricted outlet and the result is a very high velocity.

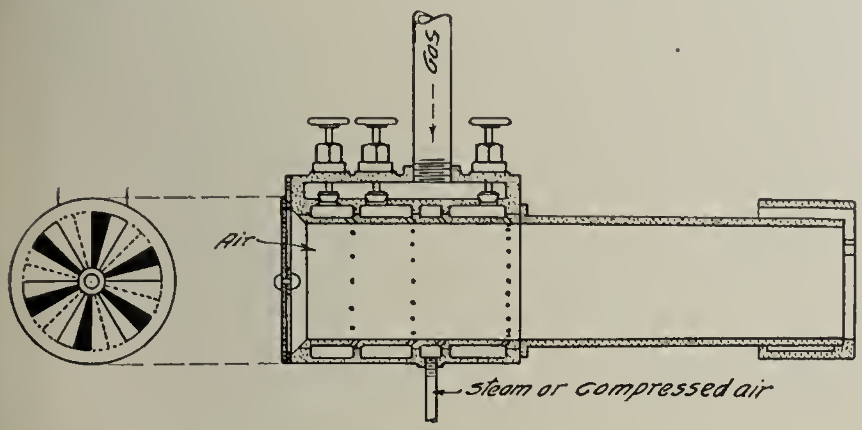


Fig. 9. Showing a Patented Design of Natural Gas Burner from Which the Control of Combustion Can be Well Regulated.

Another burner of the high-pressure class is shown in Fig. 3. In this burner the oil rises at the point indicated and is blown off and atomized by a high velocity steam or air stream, leaving the burner in a direction at right angles to the oil outlet. The atomization takes place entirely on the outside of the burner and there is practically no chance of the oil passage becoming clogged. Also, there is a hinged lip "A", forming the upper side of the air or steam outlet, which can be raised, thus permitting any scale or other solid matter to be blown out. It is claimed by the manufacturers that this burner can be so filled at the tip, as to give a long narrow flame or a flat fan-shaped flame. With this burner, the atomizing medium is controlled by a valve and the oil by a regulating cock, both apart from the burner proper.

These burners all accomplish the atomization on the outside. This is to be strongly recommended, since a burner so constructed as to effect a mixture of oil and air or steam on the inside is apt to carbonize soon and become ineffective or useless until cleaned out.

OTHER FORMS OF BURNERS

In the case of low pressure or volume burners, the steam or air pressure is not usually sufficient to properly atomize the heavier oils and tars and, therefore, the use of this class of burner is restricted and space will not be used here in its description.

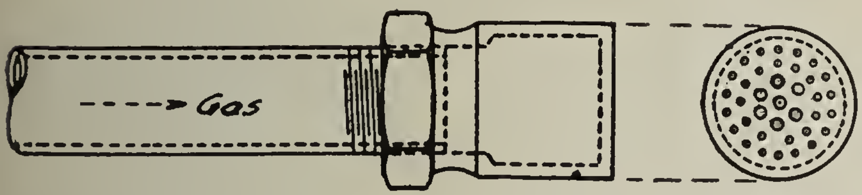


Fig. 11. A Type of Non-Mixing Burner Where the Gas is Simply Sprayed out Thru Small Holes and Mixes with the Air After Leaving the Burner.

The injector type or mechanical burner is used principally in marine service or where fresh water (for steam) is scarce. These burners are limited to the use of light crude and fuel oil which places a restriction upon the use of this type of burner also. The oil should be heated to near its vaporizing point, in which case atomization will take place as it passes thru the body of the burner and out of the tip. The required pressure of the oil will, of course, depend upon its viscosity. As these burners are more complicated than the other types considerable trouble is often experienced by reason of the orifices becoming clogged.

In one large common brick manufacturing center, where the brick are burned in clamps or scove kilns, one oil burner is used at each end of the arches. The burner sets near the ground and about eighteen inches from the outside wall of the clamp. The space between the burner and the kiln is enclosed between walls of brick and the top is stepped over with brick forming a small mixing chamber on the outside of the kiln. The front of this chamber may be closed up with loose brick to any extent desired, depending upon the stage of the burn, a large amount of air being allowed to enter during the water smoking and less air as the kiln temperature rises and excess air is to be avoided.

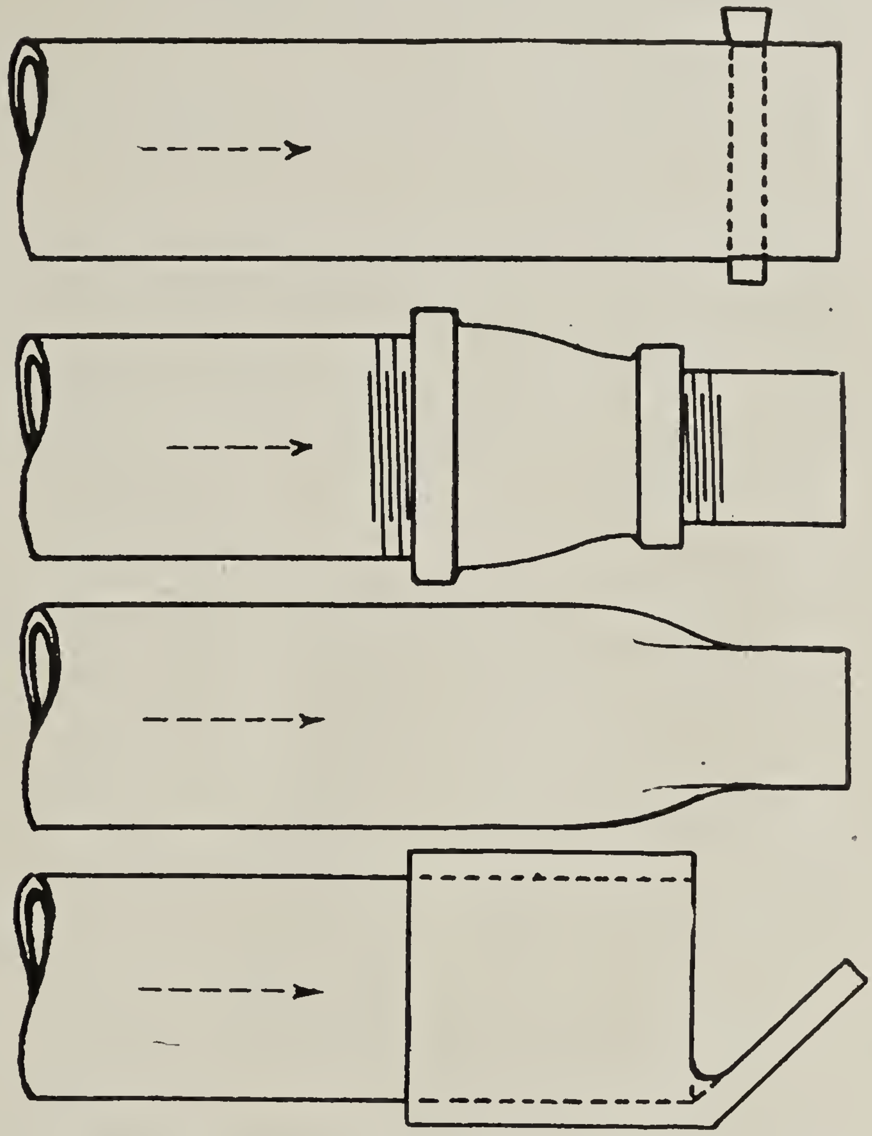


Fig. 10. Showing Four Ways of Restricting the Tip of a Burner so That it Will Give a More Snappy Flame.

INSTALLATION OF OIL BURNING SYSTEM

The oil (crude) is warmed to a temperature of about 130 deg. Fahr. and is carried along the sides of the kiln in 1½ inch diameter pipes at a pressure of 12 to 15 pounds. The steam, which is used for atomizing, is carried in 2-inch pipe line at a pressure approximately 50 pounds at the burner. It is said that 10,000 gallons of oil are required to burn a kiln of 730 thousand brick. The fact that the brick are all "coaled" and the outer courses "double coaled" accounts for the low fuel consumption. The big saving in this instance comes from the ability to "push" the heat, the burning being completed in 48 hours as against about 4½ days with coal-firing.

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In recent years it has been common practice in the East to burn terra cotta with oil. It is customary to install one burner in each furnace. (There should be at least as many furnaces as for coal-firing but there may be more). After several years of experience, at one plant, the consumption of coal tar distillate was found to run from 2½ to 6 gallons per burner per hour (depending upon length of burn, temperature attained, etc.), with an average consumption of 3½ gallons per burner per hour. This is equivalent to a total consumption of about 7000 gallons per burn of 100 to 105 hours and cone 6 (2282 deg. Fahr.); kiln 28 feet in diameter inside of muffle, with a capacity of upwards of 85 tons of terra cotta. The oil is heated by passing it thru small steel tanks containing steam coils, resulting in a temperature of about 100 deg. Fahr. Compressed air is used for atomizing at a pressure of 30 pounds at the burner, while the oil is carried at about 20 pounds. Flue gas analyses are made at this plant which has aided a great deal in a close control of the firing conditions. Where normally, with coal firing, several hundred per cent. excess air may be passing thru a kiln during the greater part of the burn, in this instance, the air excess at the beginning of the burn is about 150 per cent. and is reduced later in the burn, but is not allowed to become less than 30 per cent. excess to avoid possible reduction of ware.

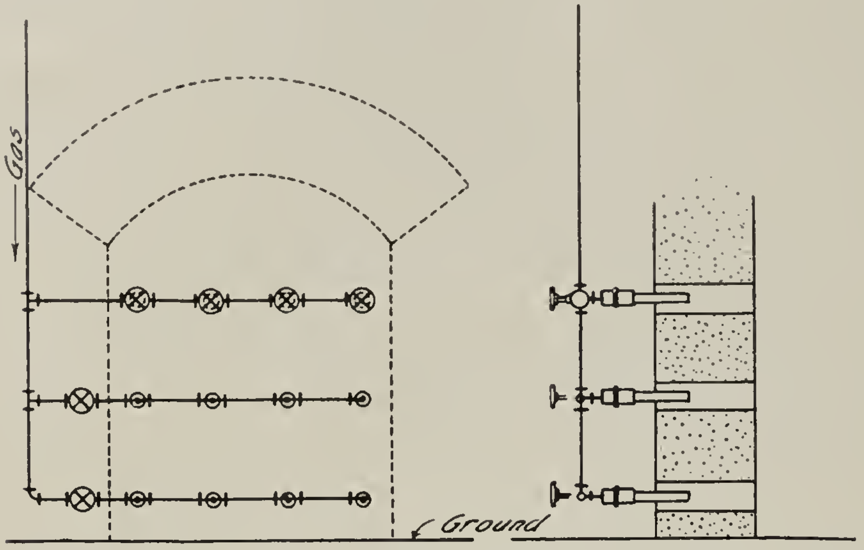

Fig. 12. This Drawing Shows a Furnace Equipped With Twelve Gas Burners Which Is Giving Good Success on a Chemical Stoneware Plant.

TYPE OF FLAME BEST SUITED

In applying oil to ordinary down draft kilns, one burner per furnace is sufficient and if its construction will permit it should be so adjusted as to throw a somewhat flat flame which will fill the width of the fire box. When steam is used for atomizing, the burner should not enter the front wall of the furnace to any great extent and should not be daubed around but there should be left an opening thru which air can be sucked by the high velocity steam and oil as it leaves the burner tip. This air is essential to support the combustion of the oil.

In changing from coal to oil firing, the question naturally arises as to whether any changes are necessary in the interior furnace construction; also as to the best elevation in the furnace to place the burner, with relation to the kiln floor level. It would probably be satisfactory to cover the grate bars with two courses of brick and install the burner above. However, the removal of the grate bars and placing the burner below their former location is to be recommended. This will result in the burner likely being a little below the kiln floor level, and will be more apt to insure a good burn in the bottom setting.

The oil flame has a cutting action and to protect the furnace lining, sand may be piled in the back of the furnace (Fig. 4). This sand serves also to deflect the flame up thru the bag. While a dropping of the furnace arch on the inner end is often to be recommended for bituminous coal firing, for oil firing it has been found advisable to raise the arch toward the bag. This tends to prevent its being cut away by the oil flame. Openings may be left above or below the burner and provided with slip brick, which may be adjusted to permit of the proper amount of extra air. Normally, an oil flame produces a very intense local or furnace temperature, and the introduction of additional air thru the front of the furnace is essential to prevent damage to the furnace lining by carrying the intense heat over into the ware.

Fig. 5 shows the application of oil burning to the ordinary pottery kiln furnace. Secondary air may enter either above or below as indicated, thru single holes or several holes side by side.

NATURAL GAS

Considering the small amount of equipment, low cost of distribution, ease of heat control and general cleanliness, it would seem that gas fuel should be given first rank. Natural gas is a wonderful gift of nature and should be appreciated to the fullest extent by those so situated as to be able to secure it. However, the supply is limited and in places its use for manufacturing has been denied for several reasons.

The average heating value of natural gas is approximately 1000 B. t. u. per cubic foot.

City or artificial gas is being used in some few instances, but, of course, only in small plants manufacturing a high priced ware.

NATURAL GAS BURNERS

As installed in commercial size ceramic kilns, there are but two classes of burners—first, those equipped with an adjustable "mixer" or air inlet, giving a combustible mixture at the tip of the burner, and, second, burners with no mixer, but which merely spray the gas into the furnace thru an opening in the front and in so doing suck in sufficient air to burn a greater part of the gas.

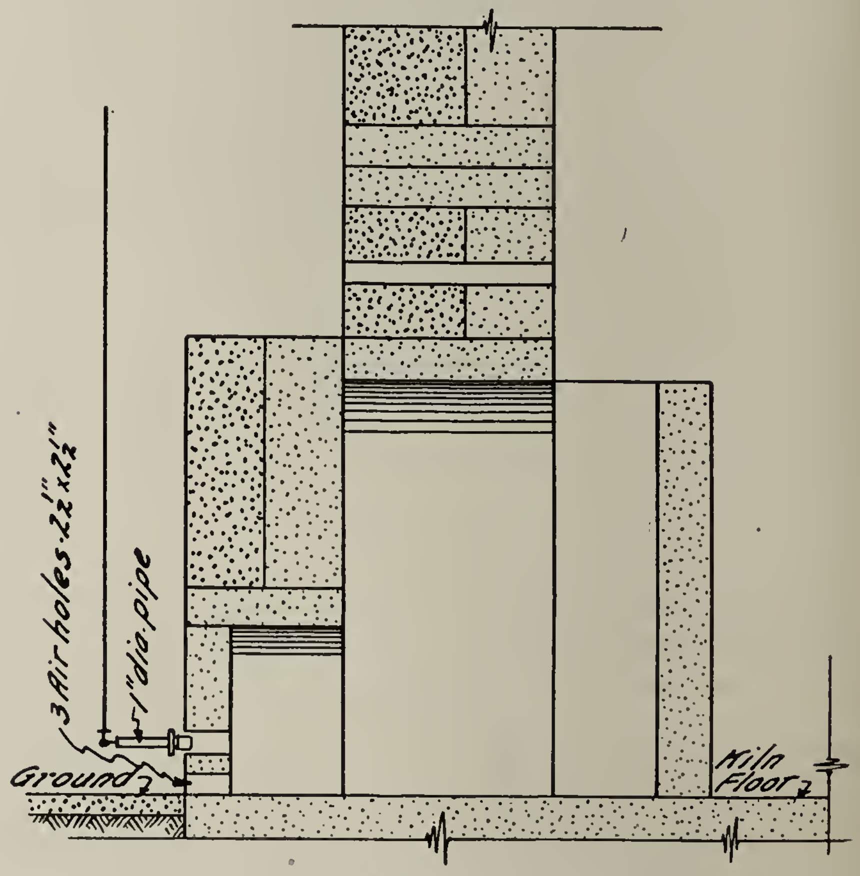

Fig. 13. Showing an Installation of a Non-Mixing Type of Burner in a Stoneware Kiln Furnace. Note the Position of the Air Holes.

In the first class there are several types:—

(a) A plain wrought iron pipe (Fig. 6) with air inlet

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holes drilled in the rear end, with an adjustable sleeve with corresponding holes for regulating.

(b) A cast iron adjustable mixer with wrought iron pipe extension, being different from (a) principally in the shape of the mixer (Fig. 7). This is a very common type.

(c) A cast iron funnel shaped mixer with wrought iron pipe or cast iron extension and a cast iron disk, which screws back and forth, for air regulation (Fig. 8).

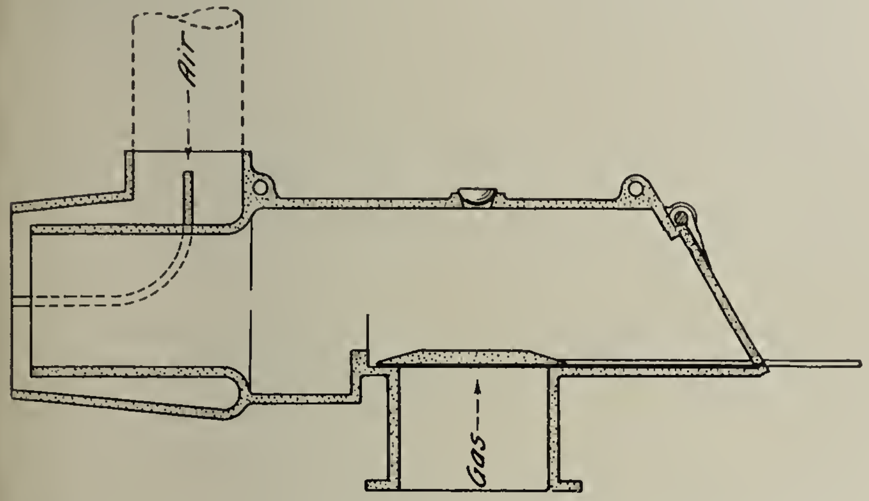


Fig. 14. Producer Gas Burners are Slightly Different in Construction Compared with Other Burners. This Drawing Shows a Type Commonly Used in Producer Gas Installations.

(d) A patented design of cast iron (Fig. 9), with gas entering the central part of the burner thru small holes leading from several separate annular chambers at the rear end, each chamber being supplied by an individual pipe carrying a valve. It will be noted that a different number of holes lead from the several annular gas chambers, so that the amount of gas being supplied depends upon which one (or how many) of the annular chambers is supplying gas. In the rear end of the burner is an air regulating disk which controls the amount of air being sucked in by the gas jets.

The barrel or extension of these several types varies from one inch to 2½ inches inside diameter and the gas jet varies from 3/32 inch to 3/16 inch diameter, both depending upon the number to be used per furnace. It is hardly necessary to add that for a given amount of gas to be burned, several small burners will more surely give an oxidizing atmosphere than one or two large burners, especially during the early part of the burn, when the full pressure of gas is not being used and the kiln draft is not good. On the other hand, the larger number of small burners, while permitting a closer regulation, will cost more and it will require more time to handle them.

INTERNAL MIXING BURNER

In these burners, which might be termed **internal mixing,** a better mixture and, therefore, better local combustion and a shorter, more "snappy" flame will result if the outlet at the tip of the burner can be restricted in some manner. This can be done in at least four ways (Fig. 10)—first, end of the extension pipe can be drilled and a ¼ inch or ⅜ inch pin dropped vertically thru the holes; second, a reducer and short nipple can be placed on the end (a reduction of from ¼ inch to ½ inch will usually suffice); third, the end of the pipe can be squeezed together and, fourth, a metal deflector can be slipped over the end, which has the effect of increasing the tip velocity as well as spreading the flame.

One difficulty experienced with this class of burner is that the flame often jumps back into the mixer and practically makes the burner useless, so far as generating heat is concerned. This happens usually during the early part of the burn when only a little gas is turned on and when the kiln draft is low. The cause of this trouble is quite evident. The mixture coming from the tip of the burner is highly combustible and if the tip velocity is low the combustion can easily work its way back against the emergent gas mixture until it reaches the gas jet. If the tip velocity is made greater, the combustion can not travel in as fast as the gas mixture is traveling out, so the burning continues on the outside. Restricting the outlet as mentioned above will usually obviate this difficulty.

On the other hand, too great a draft, or having the mixer open too wide will result in such a lean mixture and such a high burner velocity that the flame will be blown away from the tip and extinguished. This, of course, is to be avoided, as it is apt to result in an explosion in the furnace or kiln.

In the second class, the burner consists of a small chambered casting (Fig. 11), the front end of which is perforated with small openings 1/16 inch and 1/8 inch in diameter. There is no internal mixing, but the numerous small gas jets, being propelled by a gas pressure of about 14 ounces per square inch, mix with the air after leaving the burner. Of course, the mixture of gas and air is not nearly so thoro as in the other type of burners and reducing conditions are very apt to exist at times.

NATURAL GAS BURNER INSTALLATION

In using natural gas in coal furnaces it may be said in general that after removing the grate bars, no particular change is essential. A fire brick checker work is sometimes of value, especially during the early part of the burn, but after the furnace becomes hot this is hardly necessary, and is seldom used in kiln furnaces, altho frequently used in boiler furnaces.

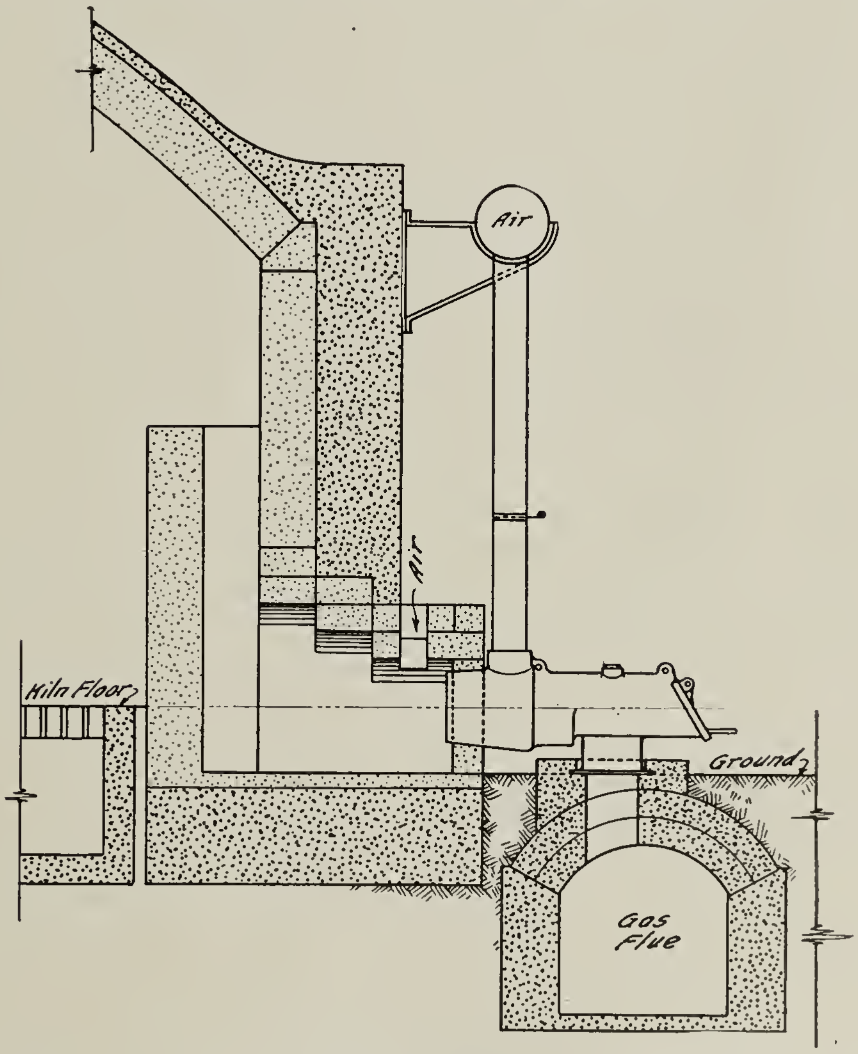


Fig. 15. The Above Drawing Gives a Very Good Idea of the Proper Method of Installing a Producer Gas System on a Periodic Kiln.

The burners should be installed preferably below the kiln floor level, and in no case should they be above the floor.

A number of years ago a change from coal to gas firing was made at a brickyard in Ohio. The burners were of the ordinary internal mixing type, and it was soon discovered that if most of the air, used for combustion, was allowed to pass thru the mixer, the furnaces became so intensely hot that damage to the linings would result, so other openings were made in the furnace front, permitting more air to enter, thus carrying more of the heat generated in the furnace over to the ware by convection.

The use of natural gas in kiln burning is generally supposed to permit a close regulation of the excess air, and, therefore, result in considerable economy in its use. However, if it is necessary to let in considerable excess air in order to "wash" the heat from the furnace over into the ware, it would not seem to bring about the increased efficiency that one might expect. On the yard mentioned above, records covering a number of burns, showed that 25,000 cubic feet of natural gas was necessary to equal former results with one ton of Hocking Valley coal. Expressed in heat units, the gas represented about 25,000,000 B. t. u., as against 26,000,000 B. t. u. in the coal.

The number of burners in each furnace varies widely—in some instances only one and in others as many as twelve. The largest number is noted at a chemical stoneware plant, where there are three "banks" or rows of type "A" mixer burners, four burners in each row and one row above the other (Fig. 12). In one row each burner is controlled by an individual valve. All burners in each of the other rows are controlled by a single valve. Thus, any number of burners can be used—from one to twelve. The burners are small, being but one inch in diameter and it is, therefore, an easy matter to maintain oxidizing conditions under all rates of gas supply. When firing coal at this plant 14½ tons (13,000 B. t. u.) per lb. of coal is required for cone 6 (2282 deg. Fahr.) on the bottom in 80 to 100 hours. When using natural gas, the burning time is reduced to 70 hours with a gas consumption of 255,000 cubic feet. Expressed in heat units, the number of B. t. u. in the gas was 255,000,000 as against 116,000,000 in the coal, which does not seem to indicate any economy on the basis of usual prices. However, it should be remembered that a large part of kiln yard labor is eliminated and the burning shortened when using gas and this should be figured into dollars saved.

At one plant, making roofing tile, there are three burners to each furnace in their round down-draft kilns and four burners per furnace in their rectangular kilns.

At another plant having round kilns, one burner is provided for each five to six tons of ware, burned to cone 5 (2246 deg. Fahr.). The gas burners have a $\frac{3}{16}$ inch gas jet. At still another plant, there is one burner to each eight tons of ware (temperature not recorded).

Fig. 13 shows the installation of the non-mixing type of burner in a stoneware kiln furnace. The kiln is 30 feet inside diameter and has fourteen furnaces. One burner is installed in each furnace, three 2½ inch x 2½ inch openings being left below for the entrance of air. Cone 8 (2354 deg. Fahr.) is brought down in 48 hours, with an average gas consumption of 500,000 cubic feet.

PRODUCER GAS

Great strides have been made in recent years toward the perfection of the gas producer. Many failures are recorded—in the earlier years principally on account of improper construction or operation of the producer, but more recently, after the essential requirements in design and operation have become better known, the trouble has probably more often resulted from the use of unsuitable coal.

Producer gas has a heating value of from 100 to 175 B. t. u. per cubic foot depending upon the grade of fuel used and the conditions of its making, but usually varies between 130 and 150 B. t. u.

PRODUCER GAS BURNER

Up to the present time producer gas is used more in continuous kilns than in periodic kilns. No burners are required for continuous kiln installations and as the application to periodic kilns is relatively recent, but two or three burners have been thus far developed for this purpose. The one most commonly met with is furnished with the "Underwood System." In this burner (Fig. 14), which is cast iron and quite heavy, the gas rises from below into the central chamber of the burner, while the air from a steel plate fan descends from above into an annular space around the gas chamber and passes out the end of the burner as a hollow cylinder entirely surrounding the gas as it emerges. It is very similar in its action to the ordinary laboratory blast lamp.

Altho the gas flues are below the ground, producer gas loses a part of its sensible heat in traveling from the producer to the kiln. Furthermore, there are considerable losses in its heating value by reason of the "cracking" of CO and CH4 and the deposition of the tar and soot. With an average content of combustible gases at the producer of about 35 per cent. and a subsequent loss of some of this between producer and kiln, it can be seen why producer gas is considered a "lean" gas. The principal difficulty (altho not a serious one), which is encountered in the use of this producer gas burner is the deposition of tar and soot within it. This is to be expected as the burner being exterior to the furnace and unprotected from radiation, is the coolest thing encountered by the gas between the producer and the kiln and deposition naturally results. For these reasons it is essential that a producer gas burner be large, simple in design and readily accessible for cleaning, which has to be done several times during each burn.

PRODUCER GAS BURNER INSTALLATION

No interior changes in construction of the coal fired furnace are necessary when installing the producer gas burner, except the removal of the grate bars. In some instances the ash pits are filled with clay or sand up to near the bottom of the burners, the center line of the burners being at approximately the same level as the kiln floor (Fig. 15). If fire boxes are constructed for these burners, they should be about twenty inches wide with the fire arch at about the same height as for coal firing. The front of the fire boxes are bricked up tight, altho an opening 4 inches x 12 inches (or equivalent area) should be left just under or thru the fire arch. This is left open during the water smoking period but later is closed and daubed.

In starting a producer gas-fired kiln, every other burner is first lighted and then after six or eight hours the other burners are brought into action.

The bags for these furnaces may be as small as 12 inches x 24 inches inside and their height above the kiln floor is usually about four feet. It is claimed that there is a saving of $350 to $400 in the furnace fire brick work of a producer gas-fired kiln over the larger furnaces and bags for direct coal-firing. No checker work is necessary in front of producer gas burners.

In the test of an Underwood installation made by the author for the U. S. Government, the average air excess during the whole burn was 59.5 per cent indicating the degree to which this feature of the burning can be controlled. The test was made on a 30 foot diameter round down-draft kiln holding 71,700 brick, total time of burning being 95¼ hours. Under high fire the gas pressure at the burners was found to be .14 inch water gage and the air pressure .95 inch.

As a comparison between natural gas and producer gas, it may be stated that 1000 cubic ft. of natural gas is equivalent to 100 pounds fair grade Pittsburg coal, when converted efficiently into producer gas or 120 pounds of inferior coal.

* * *

TENTATIVE TEST *for* REFRACTORY MATERIALS UNDER HIGH TEMPERATURE LOAD

THE OBJECT of the test is to determine the resistance of the specimen to deformation at a specified temperature for specified time, when subjected to a compressive load of 25 pounds per sq. in. = 1.765 kg. per sq. in.

2. The apparatus consists essentially of a furnace and loading device. It shall be constructed in accordance with Figs. 1 and 2.

(*a*) The furnace shall be cylindrical in form, 14 in. (356 mm.) in internal diameter, as shown in Fig. 1 (Plate I).

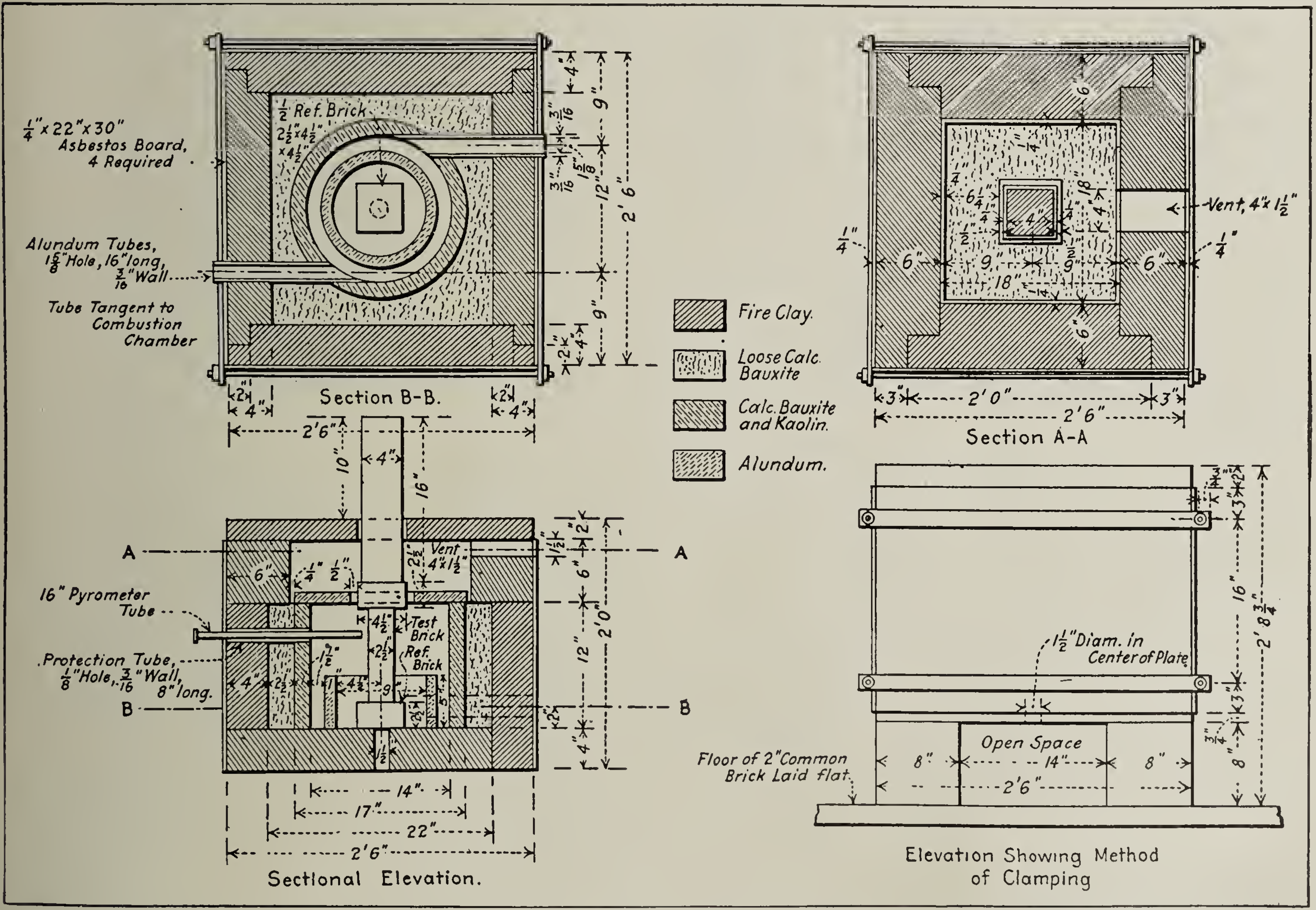
(*b*) The heating shall be done with gaseous or oil fuel and compressed air, using not less than two burners located tangentially and so arranged that no flame can impinge upon the test specimen. The burners must be such as will insure a uniform temperature in all parts of the furnace and be under complete control.

(*c*) The method of loading shown in Fig. 2 shall be used, and the details shall be such as will insure accuracy in the applied load and freedom from eccentric loading, both in the original application and during the testing. It is advantageous to make the cross-beams as light as possible, so that the greater portion of the load may be concentrated in the weights.

(*d*) The temperature may be measured either with a calibrated platinum-rhodium thermo-couple, encased in a double protecting tube with the junction not more than 1 in. (25 mm.) from the side or edge of the specimen and approximately opposite the center; or with some form of optical pyrometer that has been calibrated against a thermo-couple in the furnace. If the thermo-couple is used, the cold-end temperature should be kept constant in melted ice. A recording form of indicator is recommended where possible.

3. The test specimen shall consist, whenever possible, of a standard 9-in. brick placed vertically on end. In the case of blocks or shapes, sections approximately 9 by 4½ by 2½ in. (228 by 114 by 64 mm.) shall be cut, utilizing as far as possible existing plane surfaces. The ends of the specimen shall be either ground so that they are parallel and perpendicular to the vertical axis, or if this is impossible, shall be bedded in a neutral cement, so that the specimen is perpendicular to the base of the furnace.

The test specimen shall be measured before testing, making not less than five observations in each direction to with-



¼"x22"x30" Asbestos Board, 4 Required
½ Ref. Brick 2½"x4½"x4½"
Alundum Tubes, 1⅝"Hole, 16"long, 3/16"Wall
Tube Tangent to Combustion Chamber
Section B-B.
2'6"
4"
10"
16"
9"
12"
A
B
16" Pyrometer Tube
Protection Tube, ⅛"Hole, 3/16"Wall, 8"long.
Vent 4"x1½"
Test Brick
Ref. Brick
14"
17"
22"
2'0"
Sectional Elevation.
Fire Clay.
Loose Calc. Bauxite
Calc. Bauxite and Kaolin.
Alundum.
Vent, 4"x 1½"
18"
6"
2'0"
3"
Section A-A
1½"Diam. in Center of Plate
Open Space
8"
2'8¾"
Floor of 2"Common Brick Laid flat.
Elevation Showing Method of Clamping

Fig. 1. Showing Details of Construction of a Test Furnace in Which the Resistance of a Specimen to Deform at a Specified Temperature for a Definite Time When Subjected to a Certain Load Is Determined.

The Best Ammunition for Uncle Sam's Big Guns Is Liberty Bonds.

in = 0.02 in. (0.5 mm.). The average dimensions shall be reported, and the cross-section calculated.

POSITION OF SPECIMEN

4. The test specimen shall occupy approximately the center of the furnace and should rest on a block of some highly refractory material, having a minimum expansion or contraction. A silicon-carbide brick has been found satisfactory. At the top of the test specimen a block of similar highly refractory material should be placed, extending through the furnace top to receive the load.

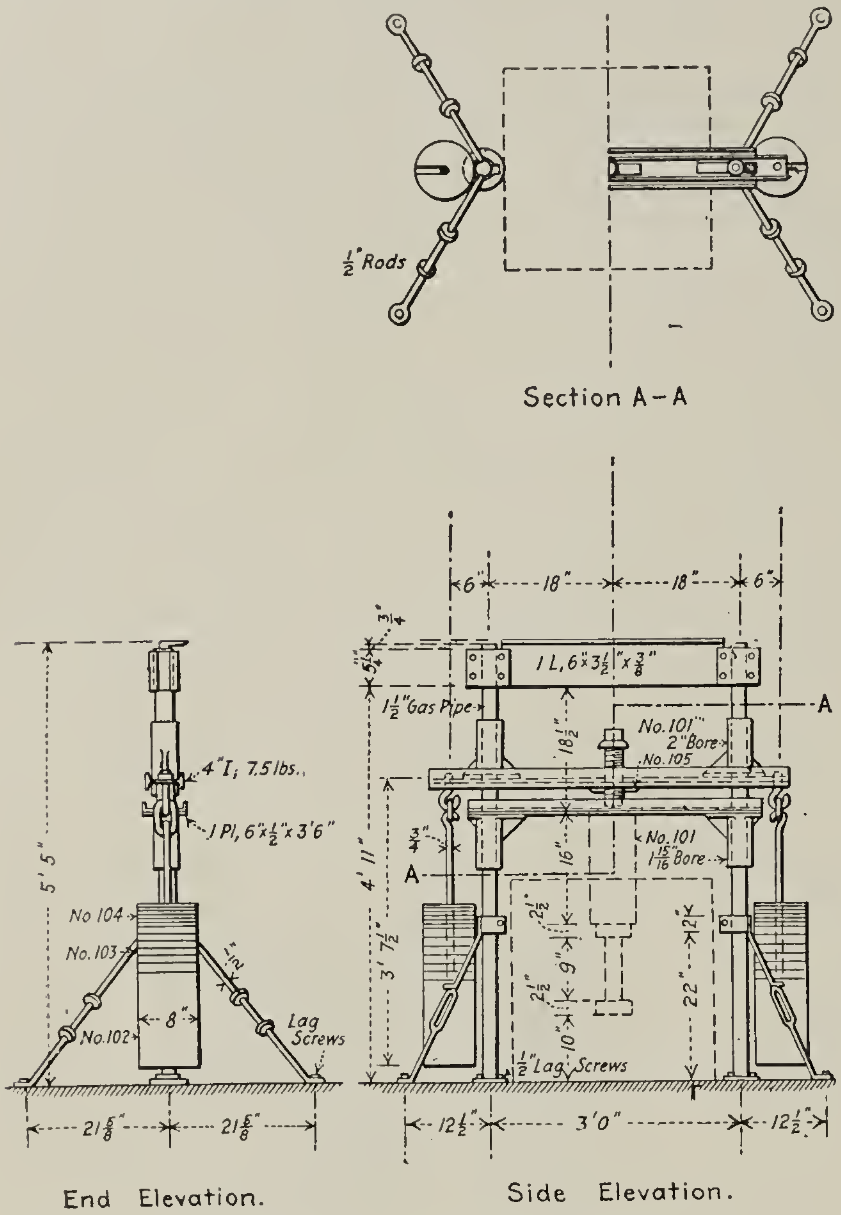


Fig. 2. The Method of Applying the Load Upon the Specimen During the Testing Is Shown Here.

5. The method of heating shall be in accordance with Table I, which gives the rate and time of heating suggested for different grades of material.

Table I.—Temperatures for Heating at Various Periods.

Temperatures, in deg. Cent., to be Maintained at the Time Intervals Specified.

Material.	1 hr.	2 hr.	3 hr.	4 hr.	4½ hr.	6 hr. (End of Test)
Silica Material..	200	500	900	1350	1500	1500
Fire Clay—						
Heavy Duty......	500	900	1150	1300	1350	1350
Moderate Duty	500	850	1100	1250	1300	1300
Light Duty........	500	750	950	1050	1100	1100

6. (*a*) The load is calculated from the average cross-section as determined on the untested specimen and the requirement of the test. It is recommended that for general purposes, 25 lb. per sq. in. (1.765 kg. per sq. cm.) be used.

(*b*) The additional masses required to give the desired loading should be equally distributed on each side of the beam.

7. (*a*) At the expiration of the time of heating, the supply of heat shall be stopped and the furnace allowed to cool, during not less than five hours before removing the load and examining the test specimen.

(*b*) After the test specimen has cooled to the room temperature, it shall be remeasured as before described, and the change in length recorded and reported as percentage of the original length.

(*c*) It is recommended that a photograph be made of the specimen before and after testing as yielding valuable information at a minimum time and expense.

⁂

Ceramists Hold Meeting in Toledo

The Northern Ohio Section of the American Ceramic Society, met in Toledo, Saturday, April 6. The program was preceded by a visit to the plant of the Buckeye Clay Pot Co., where an experimental humidity dryer was of special interest.

At the afternoon session, Dr. A. F. Gorton of the Buckeye Co. gave a very interesting account of the result of three months' operation of the dryer working on heavy blocks. A. S. Walden, foreman of the furnace department of the National Carbon Co. in Cleveland, presented a paper treating on the points to be considered in the choice of refractories for various furnace conditions. The material presented was directly based on a large experience in the construction and operation of furnaces of greatly varying types.

The charter granted to the local section by the trustees at the recent meeting of the National Society in Indianapolis was presented by Ex-President C. W. Parmelee, Department of Ceramics, University of Illinois. Professor Parmelee's address of presentation touched on the history and traditions of the American Ceramic Society and the part the local sections are to take in the future development of the organization. A business session provided for a completion of the organization details of the section. Following the afternoon program the members dined together and the meeting adjourned.

This local section draws from a very active field of ceramics and a real live organization should develop from the present preliminary efforts. The officers of the section are as follows: Chairman, E. P. Poste, The Elyria (Ohio) Enameled Products Co.; Secretary and Treasurer, Bryan A. Rice, The Elyria (Ohio) Enameled Products Co.; Counselor, Robt. D. Landrum, Harshaw Fuller Goodwin Co., Cleveland, Ohio.

⁂

Refractories Research In England

According to an item appearing in the "British Clayworker," the manufacturers of England are contemplating forming an association for refractories research. The purpose for which this association is being organized is said to be to promote research, to retain or employ skilled professional or technical advisers, to encourage the discovery of improvements, and to establish libraries, museums, etc. It aims also to promote the education of the personnel of the trade, and to "co-operate with other associations or bodies having objects bearing on the work of the association."

It is proposed to have representatives of manufacturers, users, science, and labor on the board of directors, of this association.

⁂

The Kentucky Southern Refractories Co. is operating its fire brick plants at Fort Payne, Ala., and at Missionary Ridge, Ga., to capacity, producing both fire clay brick and silica brick. This company was formerly known as the Southern Refractories Co., but amended its charter the latter part of last year and adopted the new corporate name.

Lend—Don't Waste—Your Money. Buy Liberty Bonds.

JUST *a* MOMENT, PLEASE!

Mr. Clay Products Manufacturer, You Need the Advantages and Benefits Which the American Ceramic Society Offers You and the Society Needs Your Support for Its Bigger Program of Worth-While Accomplishments—If You Are Not a Member, JOIN NOW

By Homer F. Staley

President, American Ceramic Society

THE EDITOR of *Brick and Clay Record* has kindly asked me to write a brief article setting forth the reasons why every clay products manufacturer in the United States should be affiliated with the American Ceramic Society. The desirability of such affiliation both from the standpoint of the clay products manufacturers and of the Society is so great that I comply with pleasure.

The American Ceramic Society is the great technical organization of this country devoted to the progress of the silicate, or ceramic, and allied industries. The work of the Society may be divided into three classes:

1. The publication of literature.
2. The stimulation of members to greater endeavor.
3. Altruistic service to the industry.

PUBLICATIONS OF THE SOCIETY

The Society has published nineteen volumes of Transactions comprising 11,000 pages and dealing with practically every phase of ceramic science and practice. Most of the papers in these give the results of original research. These volumes constitute a body of ceramic literature unequaled in any language on earth.*

In the past, members have received a volume of Transactions each year. It is now proposed to issue a monthly journal in place of the annual volume. This will enable us to publish our literature more promptly, to secure more high-class papers, and to serve our members and the industry better. Some of the articles appearing in the journal will no doubt be reprinted in the trade magazines, but not the long detailed papers that may be of interest to only a few manufacturers. These are the very sort of articles that will help you solve your individual problems.

The Society has translated and published Seger's Collected Writings. It has also published Branner's Bibliography of the Ceramic Arts, a Manual of Ceramic Calculations, and a Directory of Dealers in Raw Ceramic Materials. The last is now being revised and enlarged. None of these were expected to pay a profit. They were issued for the good of the industry.

Whether it pays to belong to the Society is often the first question a member asks on joining. It is the last thing he thinks of after he has attended a couple of meetings and becomes conversant with the work of the organization. While this is the least important of the reasons for belonging to the Society and one we do not wish to urge, we are proud to say it does pay in dollars and cents to be a member. One good idea obtained from our literature will pay for any class of membership for many years.

Besides the publication of ceramic literature, many of the other activities of the Society result directly and indirectly in financial benefit to ceramic manufacturers. Among these might be mentioned encouragement of ceramic education, and research, co-operation with other societies and government bureaus, and the quickening of intellect and "will to do" in manufacturers and employes who become members.

INSPIRATION OF MEMBERS

The membership of the society is comprised of over eight hundred owners, managers and superintendents of clayworking, glass, enameled metal, abrasive wheel and cement plants, producers and merchants of supplies and equipment used in these industries, ceramic engineers, chemists, instructors in ceramic schools, and others interested in various ways in the silicate and allied industries. These men are the leading spirits in the technical control and progress of a vast industry, which employs over 250,000 men and produces annually wares valued at over $400,000,000. They represent actual power and have real brains. The intellectual quickening due to contact with these men and their writings is of great importance. Each member sees his particular industry in relation to the other ceramic industries and his own achievements in comparison with those of other men. He is filled with a determination to keep out of intellectual ruts, to work with a will, and to accomplish something of note.

The spirit and practice of mutual helpfulness has grown to be one of the chief characteristics of the organization. There is no compulsion for a member to divulge shop secrets. Any information he offers is of his own free choice. However, at our meetings most of the members talk "shop" rather freely both in and out of the fixed sessions. Each contributes something to the discussions and obtains the advantage of the contributions of all the others.

A member comes from a meeting not only with useful information and an alert mind, but also with the inspiration which is the result of this spirit. He feels that he is not making a lone fight, that others working in the same line are interested in his efforts and are ready to help him, and that he in turn is helping others. His work is no longer a mere "job"; it is an opportunity for study and his place in the march of progress.

ALTRUISTIC SERVICE TO THE INDUSTRY

The American Ceramic Society works in various ways for the progress of the ceramic and related industries, with-

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*Members have the privilege of buying these volumes at a large discount.

Make the World Safe for Democracy—Buy a Liberty Bond.

out particular thought of benefit to the Society or its members.

Among these activities may be mentioned: aid in developing ceramic departments in several colleges; the formation of Student Branches in four universities; the establishment of Local Sections, open to non-members of the Society, in each important ceramic district in the country; the encouragement of research in various ways; aid in securing the establishment of ceramic research departments in various government and state bureaus and private works; standardization of the methods used in the testing of ceramic materials and products; promotion of the interests of the silicate industries by co-operation with other societies and government bureaus. A very important committee on Military and Industrial Preparedness is actively aiding the government in the prosecution of the war and in preparing the silicate industries of this country to meet conditions after the close of hostilities.

These activities pay no profit, they bring no return to the Society. Yet they are the very lines of work in which we wish to engage more and more. They are conducted entirely by committees. The busiest men in the Society are glad to give freely of their time and energy to the work of these committees. They feel that they should do this for the good of the industry.

YOUR OPPORTUNITY FOR SERVICE

The Society is doing a good and big work. It is *helping you*. You probably wish to *help it* do the greater things that will be possible with a larger membership. If so, we would be glad to have you become either an Associate or Contributing Member. The latter class is open not only to individuals but also to firms and corporations and is growing rapidly. You will benefit in many ways by your affiliation with the Society and in addition will have the satisfaction of knowing that you are promoting the technical advancement of your industry.

* * *

Read the Official U. S. Bulletin

Owing to the enormous increase of government war work, the governmental departments at Washington are being flooded with letters of inquiry on every conceivable subject concerning the war, and it has been found a physical impossibility for the clerks, tho they number an army in themselves now, to give many of these letters proper attention and reply.

There is published daily at Washington, under authority of and by direction of the President, a government newspaper—the Official U. S. Bulletin. This newspaper prints every day all of the more important rulings, decisions, regulations, proclamations, orders, etc., as they are promulgated by the several departments and the many special committees and agencies now in operation at the national capital. This official journal is posted daily in every postoffice in the United States, more than 56,000 in number, and may also be found on file at all libraries, boards of trade and chambers of commerce, the offices of mayors, governors, and other federal officials. By consulting these files most questions will be found readily answered. There will be little necessity for letter writing; the unnecessary congestion of the mails will be appreciably relieved; the railroads will be called upon to move fewer correspondence sacks, and the mass of business that is piling up in the government departments will be eased considerably. Hundreds of clerks will be able to give their time to essentially important war work, and a fundamentally patriotic service will have been performed by the public.

IF YOU ARE INTERESTED FILL OUT THIS COUPON

Prof. Chas. F. Binns, Secretary,
American Ceramic Society,
Alfred, N. Y.

I believe the American Ceramic Society is an organization with which I ought to be affiliated, not only for the benefit that would accrue to me, but also that which would come to fellow ceramists and clayworkers thru our mutual contact. Please send me application blank for membership, as well as any further information necessary.

Name ....

Business or Profession..

Town ....State ....

Note:—*It is understood that I am not obligated in any way unless you send me and I sign and return the above mentioned application blank.*

This Coupon is Inserted at the Suggestion of the Eritors of "Brick and Clay Record." We Urge That You Fill It Out and Send It to Professor Binns. Its Use Involves No Obligation.

Is Uncle Sam's Word Good?—Then Buy a Liberty Bond.

DON'T USE LIBERTY BONDS *as* CURRENCY

DURING the past few months there has developed among business men a tendency to make known to the buying public the fact that they are willing to accept Liberty Bonds the same as currency for purchases of merchandise. In fact, a large number of firms have been inserting notices in their advertising literature that these bonds are just as acceptable as cash. There is no doubt whatever that these business men are inspired with the loftiest patriotism and are in this manner endeavoring to influence the public as to the undisputed value of these bonds and also to create a greater market for them. But there are several serious objections to this plan of dealing with the bonds, and these objections seem to have been overlooked by those who are engaged in the practice of trading merchandise for them.

THREE STRONG OBJECTIONS

One of the first objections that may be made, and the one that has been particularly emphasized by the Secretary of the Treasury, is that this practice encourages the disposal of Liberty Bonds that were originally taken for investment and with no thought of converting them into currency. It will also create an increasing demand for certain classes of material of which the government is badly in need at the present time. In other words, it will make the owner of a Liberty Bond a buying competitor of the government.

The second objection is that it will cause the concentration of a large number of bonds in the hands of business men, who would ultimately have to throw them on the market in order to maintain a sufficient working capital. Should there be heavy selling movements caused in such a manner it might produce the undesirable result of causing fluctuations and depressing the market value of the bonds. This should be avoided under all circumstances, as such an occurrence would have a retarding influence on the sale of future issues of government securities.

The third objection is that the constant use of Liberty Bonds instead of currency would necessitate frequent adjustments between the price of the bonds and the prices of merchandise. Many buyers would offer bonds in payment of merchandise, even tho they might have available funds with which to make payment, but which funds would not afterwards be invested in Liberty Bonds.

One business man who favors the use of Liberty Bonds as currency gave as his reason the fact that many firms had purchased more of these bonds than they should have, and, therefore, started to unload them. This caused the selling movement that was responsible for the depression in the market some time ago. But at the same time he argues that these business men should accept them as currency, thereby increasing their holdings to a still greater extent.

BUSINESS MAN'S INVESTMENT LIMITED

There is no doubt that the individual small investors have not purchased more Liberty Bonds than they could well afford to hold, while the business men have in many instances exceeded this limit. It is needless to point out that it would be unwise if too many bonds were concentrated in the hands of the business men of the country. There is a limit to the amount of money that the business men can invest in securities, and when that limit is reached, there is a tendency to unload them and depress the market. Furthermore, the buying public at the present time has ample funds with which to purchase all requirements without having to dispose of the bonds in this manner. In fact, those investors who purchased only one or two bonds are those who at the present time are earning abnormal wages, and could really have doubled and trebled their investments without the slightest sacrifice on their part.

Of course, if this plan would not be practiced to a large extent it would not have any serious effect on the situation, but when one firm after another encourages the trading of the bonds it is liable to develop into a serious retarding influence in the disposal of future issues of Liberty Bonds. When the government is making every possible effort to encourage and increase the number of small investors it would be a sort of checkmate if the business men should endeavor, thru a mistaken policy, to decrease the number of these investors.

In several cities where this plan had been started, the business men soon became aware of the other side of the question. They then agreed upon a definite policy in handling the situation, and the plan of trading Liberty Bonds for merchandise has been discouraged. They do not state that the bonds will not be accepted for purchases, but they assist the government in its efforts to have the investor retain his securities. Of course, when a buyer insists on offering his bond in payment it will be accepted; but he is always advised to hold it, and a number of good reasons are given for so doing.

It is suggested that the business men can give greater aid to the government if they will invest their surplus funds in bonds at the time when subscriptions are being taken. In other words, it is more advisable to purchase the bonds from the government than to repurchase them from individual small investors.

The small investors are very numerous and control a large amount of capital, which at this time is the nation's bulwark. To encourage these small investors to dispose of their holdings would be equivalent to encouraging the dissipation of capital.—*Ralph H. Butz.*

* * *

Summary of Building Conditions

The Federal Reserve Bulletin for April reports the following conditions of building in various parts of the country as of March 23:

In district No. 1 (Boston), building construction is reported as being below normal; district No. 2 (New York), building light, ship building active; district No. 3 (Philadelphia), construction decreasing; district No. 5 (Richmond), private building negligible, government work active; district No. 6 (Atlanta), construction very light; district No. 7 (Chicago), no building activity worthy of mention; district No. 8 (St. Louis), construction work quiet; district No. 9 (Minneapolis), building slow; district No. 10 (Kansas City), building operations generally curtailed; district No. 11 (Dallas), building inactive, some revival, believe will soon be active; district No. 12 (San Francisco), thirteen per cent. decrease in building over one year ago.

* * *

Hollow Tile Headquarters at Washington

After struggling with the problem of finding suitable quarters in overcrowded Washington, E. R. Sturtevant, manager of the new hollow building tile bureau, which has been organized to co-operate with the government to supply its needs for that material, is now located at 631 Pennsylvania Avenue, N. W., Washington, D. C.

* * *

Pardis and Letourneau, brick manufacturers at Quebec City, Canada, have been registered.

Every Idle Dollar Is An Alien Enemy, So Buy Liberty Bonds.

MORE WARE *from* LESS FUE

Written from Real Experience on a Clay Plant Where Good R
Theoretical Advantages of a Pyrometer—It Gives Actual Figur
sults. The Author Writes: "I Should Like to State Here Th
Touched Up for the Sake of Adding to Their Effectivenes

A NUMBER OF ARTICLES have appeared recently in which the pyrometer and its principle have been fully and carefully explained. Because of this, the writer is assuming that the reader is familiar with the principle of the pyrometer and also what the readings taken from it are intended to indicate and how the pyrometer should be handled and cared for.

If, by chance, you are not in possession of this information, you will be well repaid if you will devote considerable time to the study of the subject and thus ascertain how you may employ this very useful device to indicate to you how money may be saved for you or your employer. The savings will come from fuel saved and material improved or wasted material saved.

HOW CAN FUEL BE SAVED?

The subject of fuel saving is one that is of interest at this time to every manufacturer and more particularly the clayworker who is engaged in the manufacture of face brick or perhaps, refractory materials.

A very natural question arises when the subject of pyrometers is mentioned and it usually takes this form: "How can I save fuel by using two small wires connected together?" The answer is—That you cannot. However, if you are willing to put a pyrometer into use and will then carefully study the charts resulting from its use, you will soon find that certain conditions are existing that were formerly unknown to you and by making changes in your burning schedule you can save fuel. The pyrometer simply indicates the way.

PYROMETER POINTS OUT WASTE

If you are not using a pyrometer, send for a portable instrument of any recognized make. After it is received go out on your yard and take a few readings. I promise you that you will find it interesting and the more you study it the more interested you become. Allow me to illustrate this by giving a description of an actual occurrence. A yard was visited and a portable instrument was taken along so that some heat indications might be made. I shall mention one kiln only; in this the heat was found to register 1,600 deg. Fahr. on top and 400 deg. Fahr. in the bottom. The kiln had been burning twenty-two hours. An investigation proved that the usual breakage from kilns, or bats as usually spoken of, was from three per cent. to five per cent. and the lower ten courses in the kilns could not be sold for first quality ware because of color and being under-burned. If the burning was continued long enough to complete the bottoms, the tops were over-burned.

After a study of the material and general conditions and installation of a much needed correction of the burning schedule this same yard has less than one-half of one per cent. kiln breakage and first quality ware is taken from the very bottom of the kilns. In addition to this there is a saving of twenty per cent. of fuel.

Someone may say "Conditions were unusually bad in this case." True, they were bad, but the yard was one on which conditions were thought to be unusually good, surely as good as many of its nearby neighbors had. The one great trouble was this: "We are doing better than we have ever done before and we believe that we are now doing as well as can be done." They were beaten by their own slogan. However, a study of kiln temperatures and the installation of a means of controlling same did improve conditions. Are you not willing to investigate a subject that shows such possibilities? One large kiln of ware unnecessarily ruined by faulty burning represents the cost of a good pyrometer installation and when installed, daily dividends will accrue in the fuel savings.

ACTUAL SAVINGS FIGURED OUT

Let us see just what the saving is in the case named above

The Only Way to Tell the Heat in a Kiln at the Early Stage of a Burn is by Means of a Pyrometer. No One can do It by Merely Looking Into the Kiln.

Editor's Note—The author of this article has requested us not to publish his name. However, he has charge of the manufacturing end of a large face brick company in the East and is in a position to give some constructive literature on the subject of his article.

MEANS *of a* PYROMETER

Vere Obtained. This is Not Merely an Article Setting Forth
ve the Value of Pyrometers and Shows How to Get Re-
ustrations Given Are Actual Happenings and in No Way
t, the Improvements Have Proven Greater Than Described."

and possibly the figures may surprise us. Let us assume the price of the coal to be $3.25 per net ton, delivered on the yard and brick worth ten dollars per thousand for first quality ware. (Yes, these are pre-war prices but the same conditions prevail in many places.) Shale brick of standard face brick size, when well burned, require an average of 1,300 pounds of coal per thousand brick when burned in ordinary down draft kiln. If the yard mentioned above was wasting twenty per cent. of its burning fuel an average of about 1,625 pounds of coal per thousand brick was formerly used. I feel sure that you will agree that the saving of 325 pounds of coal per thousand brick is no small item and on a kiln containing 60,000 brick we find this means a saving of nine and three-fourths tons of coal, worth $31.68.

Now let us look for the savings in material formerly wasted or sold at a sacrifice because of quality and we will find at least three per cent. breakage saved on the 60,000 brick or 1,800 brick and these at $10.00 per thousand represent $18.00; formerly fifteen to twenty per cent. of the contents of the kiln were sold as lower grade brick because of being either soft, checked or badly kiln marked while now nine per cent. covers this lower grade of ware at any time and this will show an average per burn of 5,400 more first quality brick, which at a difference of three dollars per thousand gives us a saving here of $16.20 while the culled brick, because of being harder burned, bring one dollar more per thousand and show a further saving of $5.40. We now have $31.68 plus $18.00, plus $16.20 plus $5.40 or a total of $71.28 which represents the saving in burning one kiln of sixty thousand brick. DOES IT PAY?

The View Above Shows a Pyrometer Couple Inserted on the Top of the Crown of a Rectangular Kiln. Note the Weather-Proof Installation.

The result of prolonged study no doubt, has brought the percentage of culls down to five per cent. or six per cent. Please note that with the improvement here made, eleven burns now produce the same quantity of first quality brick as were formerly produced in twelve burns and thus a large fuel saving is plainly shown, this same fuel being available.

NATURAL GAS WASTED WITHOUT PYROMETER

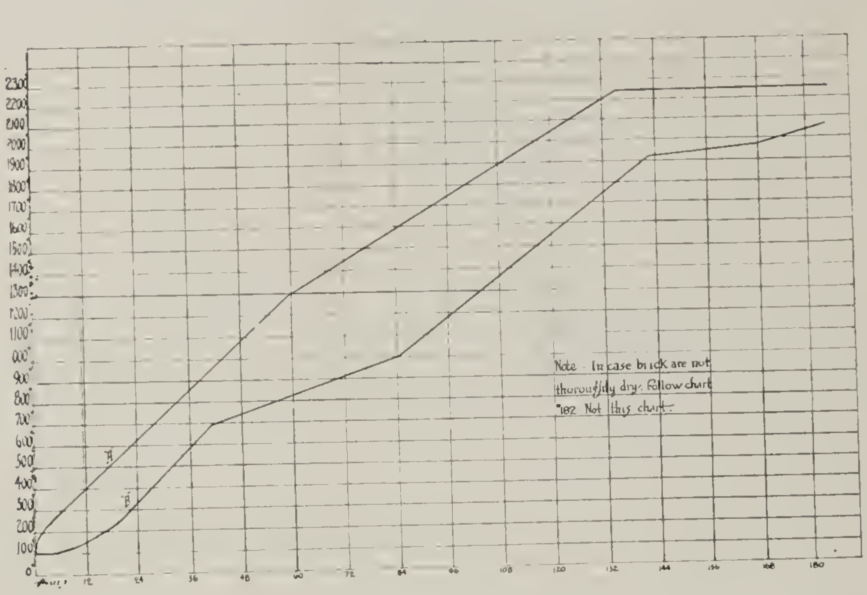
Do not make the error of thinking that the study of burning conditions where natural or producer gas is used will not prove profitable; I think it will and it is almost a certainty that where natural gas is used without a pyrometer equipment gas is being wasted. Exception will probably be taken to this statement but the only way to prove the negative is for the objector to install the pyrometer, use it faithfully for six months, make a careful study of the charts obtained and at the end of the six months he may not be willing to state that he has saved gas but he certainly will not part with his new found friend and aid.

The good "Oldtimer" thoroly trained as a burner, tells me that he can tell to the one-sixteenth of a degree how hot his kiln is. Do I believe him? Certainly I do. I cannot tell as closely as that and therefore I am unable to prove his statement untrue. If he can tell heat as he states, I envy him but still I am very much interested in knowing how he knows the heat range between 75 deg. Fahr. and 1,050 deg. Fahr. I never yet have met the man who could tell me the heat of the kiln by looking into it during that range of the burn.

We know that much trouble, particularly in drain tile and hollow-ware, is caused during the water-smoking and early carbon periods. Here is where the pyrometer is an aid for it can work in the dark and the burner can read the record in the light. It is surprising to learn that kilns are often held longer at low temperatures than is necessary and thus some fuel wasted but more often the trouble is that the heat is advanced too rapidly and then results waiting—waiting—waiting for the bottom to come along. Why bring the top to 1,600 deg. of 1,800 deg. in two days and then wait three or four days for the bottom? It wastes fuel. It is far better to progress slowly, get a better burn and actually save fuel and time.

MAKE WISE SELECTION OF PYROMETER

In selecting a pyrometer, do not be guided wholly by the manufacturer. Use your own ideas for you know what you want to attain. The manufacturer simply wants to sell you the instrument and accessories. The pyrometer manufacturers have recently approached the selling of their wares to the clay products industry from the wrong angle. They should have sold SERVICE first and instruments second, then better results would have been attained and greater progress made.



The Graphs Shown Here Are Burning Curves Drawn for the Burner's Guidance. "A" Represents the Top Temperatures While Curve "B" Gives the Door Temperatures.

Select an instrument that will give you the results you wish, that is, give records so that you may find indicated the manner in which you may save coal and secure more and better material from the kilns. After the installation is made, do not allow anyone to switch you to another make of instrument, study the one you have. They all have their good points and, unless well taken care of, their bad ones. When you place your order have it plainly understood that you want service and then more service.

After the installation is made do not simply look at the charts produced to see how the burn has progressed. Draw a curve to represent the progress of the heat during that particular burn; this will prove valuable. After a period of six months has elapsed you will have a number of curves, some of burns that were particularly good and possibly some of burns that were particularly bad. In addition to these heat curves you should have the records of the burns belonging to each chart so that you may study the percentages of firsts, resets, breakage, etc.

By making a study of each kiln you soon discover the particular differences in the various kilns and also how they must be handled to get the results you wish. You have the written record of what was set each time, what was produced, how it was burned and what changes seem to be necessary to get better results. Without such records dependence is placed in the memory of someone and we too well know how hard it is to remember accurately just what we did three weeks ago. By all means secure accurate records and then study them diligently.

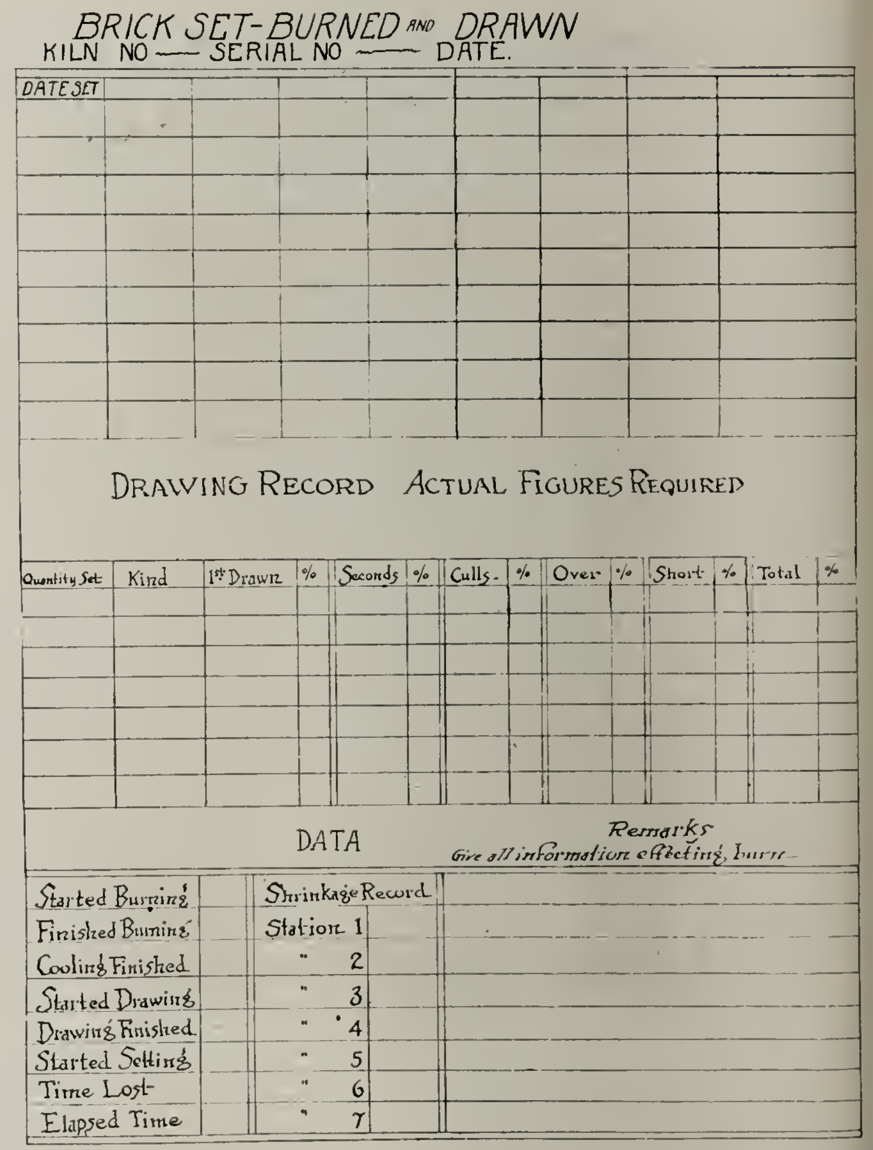
A STUDY OF CHARTS PROFITABLE

The writer had the pleasure of looking over a series of fifty-one charts that were drawn by a manufacturer who has studied the subject seriously. These charts were the records of forty burns on the different kilns. The heat curve for the best burns of each particular kiln were collected and then redrawn on one chart, different colored inks being used to designate the different initial curves, and from this chart of many curves a composite curve was drawn which applied to the particular kiln being studied. This same thing was done for each kiln and when a composite chart for each kiln had been drawn, these curves were drawn on another chart which became a record of the composite curves of the various kilns and from which a master chart was drawn and from this an hourly heat schedule was given the burner to follow. It may be said that this is a tremendous amount of work and did not pay. Well, if ninety-five per cent. first quality ware is worth having, the above kind of study will lead towards it, for it must be borne in mind as well that when the quantity of first quality material is increased per burn then an ultimate saving of fuel results.

The objection is seriously raised by some that a pyrometer installation is expensive. If one dollar per thousand brick could be saved on an annual output of twelve million and that saving attained by the outlay of from two to five thousand dollars would it be worth while to spend the money? Many buy oil stocks for a six per cent. dividend but refuse savings like the above.

FUEL WASTE IN DRYERS

Just a word about dryers. If direct heat is used in operating a dryer it is entirely possible that a recording thermometer properly installed would save money by giving indications of how to improve drying conditions. It is often found that a saving in dryer breakage can easily be made by changes which are very quickly suggested after a record is shown of heat conditions in the dryer. Conditions are often far from being what they are thought to be. If the breakage is high, something should be done to remedy the



BRICK SET-BURNED AND DRAWN
KILN NO —— SERIAL NO —— DATE.

DATE SET

DRAWING RECORD ACTUAL FIGURES REQUIRED

Quantity Set	Kind	1st Drawn	%	Seconds	%	Culls.	%	Over	%	Short	%	Total	%

DATA

Remarks
Give all information effecting burn

Started Burning		Shrinkage Record	
Finished Burning		Station 1	
Cooling Finished		" 2	
Started Drawing		" 3	
Drawing Finished		" 4	
Started Setting		" 5	
Time Lost		" 6	
Elapsed Time		" 7	

These Tables Are Used to Keep a Record of the Results of Each Burn. In this Way the Record of Each Burn is Kept and it Becomes an Easier Matter to Reproduce Good Burns.

You Have a Liberty Bond—Well, Buy Another!

trouble. Every brick unnecessarily broken by improper drying represents just its ratio of power to produce it and added labor cost. A six per cent. dryer loss that is unnecessary means that seventeen kilns of brick are put thru the dryer and only sixteen kilns are set. This means WASTED FUEL.

In closing, allow me to caution the reader against the common error of expecting a pyrometer equipment to work exactly with pyrometric cones. The manufacturers will not promise you any such results nor can it be expected. One indicates heat as it is while the other indicates heat action. Use cones with the pyrometer, too many guides are not to be had.

Good as cones are, they are of no use to the burner when he cannot see them and one of the most critical periods of the burn is that which occurs while the interior of the kiln is shrouded in blackness. Remember, the pyrometer can indicate to you in the light that which is working in the dark. You can profit by those indications and SAVE FUEL.

* * *

Martin N. Kimbell

Martin N. Kimbell, president of the Kimbell-Hill Brick Co., of Chicago, was accidentally overcome by escaping Company, of Chicago, was accidentally overcome by escaping gas at his suburban home in Park Ridge, Ill., on April 12. Mrs. Kimbell and the two younger children were visiting in California, the oldest son, Martin N. Kimbell, Jr., was in the field hospital service at Camp Logan, Houston, Texas, and the house had been closed during the winter. The gas was disconnected last fall and Mr. Kimbell, not knowing this, met his death when he turned it on while preparing for the return of his family.

MARTIN N. KIMBELL

Mr. Kimbell was born in Chicago on June 10, 1875, and for twenty-six years had been active in the facing brick business. He started in 1892 with the Chicago branch of the Hydraulic-Press Brick Company, under the management of his uncle, Spencer S. Kimbell. In 1905 he became an officer of the S. S. Kimbell Brick Company. In 1914 he helped organize the Kimbell-Hill Brick Company, and was its president from the beginning.

Mr. Kimbell was an enthusiastic and successful brick salesman in the best sense of the word. He enjoyed his work and had the confidence of his trade and the respect of his competitors.

* * *

Chamber of Commerce Sees Need for Good Roads

AT THE GREAT MEETING of the Chamber of Commerce of the United States just held in Chicago, the one element of national strength which was deplored above that of any other and which affects singularly everybody and all as a whole was the acknowledged inefficiency of transportation service. It was acknowledged as the one thing lacking which affects our industrial welfare and impairs our military strength.

It is a great pity that the entire public should not have heard the men best informed upon the subject.

Roy Chapin, of the Highway Transport Board of the Council of National Defense, expressed his firm belief that the automobile trucks moving over adequate hard surfaced highways would afford entire relief for the movement of freight inland.

Richard H. Edmonds, Editor of the "Manufacturers' Record" urged in a most forceful way the emergency and necessity for the immediate construction of highways to take care of the traffic of the country.

F. A. Sieberling, President of the Goodyear Tire & Rubber Co., sees in properly improved highways a complete relief in the shortage of transportation facilities for the country.

It readily could be seen that road building to meet this demand and this situation as outlined by the speakers must be such as to sustain the on-coming traffic.

Railway engineers have seen that the use of ninety pound rails will not alone answer the economic problem for the movement of heavy trains and their position upon this question comes in the nature of an alarm that if we do not build strong durable "tracks," in the form of dependable highways, millions of dollars will be wasted.

It is admitted that properly constructed brick streets are to become the one economic salvation to the country. Such roads will do all that is expected of them. It is readily seen that such a road will equal in service that of any steam railway.

These ideas were deeply impressed at this great meeting in Chicago and it is believed that such an appreciation and sense of the importance of this matter to the country's welfare will find lodgment in the various chambers of commerce in this country, and that brick roads, even in times of war will not only come into the very highest appreciation, but they will become standard not only in mind, but in use thruout the country.

* * *

Frank A. Rhodes and B. S. Maultsby have agreed on a division of their interests in the McIntyre Brick Plant and the Excelsior Brick Plant located in North Montgomery, Ala. The deed states that Messrs. Rhodes and Maultsby owned a half interest in the McIntyre plant while the other half was owned by the Jenkins Brick Co. and Rhodes and Maultsby were joint owners of the Excelsior Brick Co. Maultsby has transferred to Rhodes his interest in the Excelsior Brick Co., while Rhodes has conveyed to Maultsby his interest in the McIntyre plant, the agreement being that Rhodes shall pay Maultsby $5,000.

If Uncle Sam Prospers You Prosper—Buy More Liberty Bonds.

MOTOR TRUCKS *and* HIGHWAY TRANSPORTATION

Statistics Show That the Railroads Have Nearly Reached the Limit of Their Capacity for Freight Hauling, and There is a Growing Shortage of Cars. They Have Advocated the Use of Motor Trucks on the Public Highways for Short Hauls to Relieve Congestion. Increased Highway Construction and Organized Effort to Encourage the Use of Highways Are Essential to Make the Potential Relief an Actuality

By Maurice B. Greenough

Chief Engineer, National Paving Brick Manufacturers' Association, Cleveland, Ohio

Read before Section D of the American Association for the Advancement of Science, December 28, 1917, at Pittsburgh, Pa.

THE LATEST REPORT of the Bureau of Railway Economics for the Railroads' War Board shows that the number of tons of freight carried per loaded car in August, 1917, was 27.9, 2.6 tons more than for the corresponding period in 1916. For the same comparative months, the average train-load tonnage rose from 646 to 686. Again for the month of August, the average freight locomotive daily run increased from 68.8 in 1916 to 69.4 in 1917. In 1915 the daily average was slightly over 64 miles per day. The daily run of freight cars decreased between August, 1916, and 1917 from 27.5 to 27.1 miles.

These figures represent the outcome of the railroads' endeavors to increase hauling efficiency. Excess car loading, more careful stowing of freight, sailing days for less than carload shipments and other agencies all contributed. But examine the reports of unfilled car requisitions on the first of these months in 1917:

May	148,216
June	106,649
July	77,682
August	33,776
September	40,000
October	70,000
November	140,000

Compare the shortage of nearly 34,000 cars on August 1, the season of maximum car supply, with the situation on the first of August, 1915. There was then a surplus of 265,000 cars.

Commenting on the car shortage of November 1, "Railway Age Gazette" says: "The conclusion is obvious. Increases in traffic are again occurring faster than increases in transportation efficiency. Under present conditions that means that the excess demand for transportation over the supply of it is growing."

Translating the car shortage of November 1 in terms of tonnage withheld from movement, there were approximately 3,906,000 tons of all commodities, and 5,700 freight trains above the available supply required.

These are the facts on railroad hauling capacity today. What of the future?

SHORTAGE IN REPAIR MATERIALS

What the best railroad officials expect or even hope to do in the coming year is to add enough new locomotives and freight cars to replace what is forced to be scrapped thru entire lack of utility. If every carrier were able to pay spot cash for new equipment it could not be secured, and there is a threatening shortage in materials available for repair and maintenance of track and rolling stock. Four new locomotives were recently delivered to the eastern division of the Pennsylvania Railroad, delivery on which was to have been last February. On the same division, between thirty and forty locomotives were thrown out of commission in the cold snap by frozen tubes. At a time when cars and engines are working more miles per day than ever before, approximately ten per cent. less are awaiting repairs in the shop. According to the report of the chief inspector of locomotives to the Interstate Commerce Commission, there are 54.5 per cent. of locomotives in service that are defective; 7.5 per cent. more than a year ago.

"Railway Age Gazette" addresses itself to the question: "'Have the railways reached, or are they closely approaching the limit of their capacity with their present facilities?'" It says:

"The railways as a whole are still increasing the amount of traffic they are handling; and nobody can compare the statistics of car capacity with those of the tons actually being hauled per loaded car * * * or the comparative statistics of different roads, showing as they do that some roads are handling more business per mile of track and per mile of line than other roads under comparable conditions without concluding that it is possible to handle a much greater tonnage with existing facilities. But what is possible and what is practicable are commonly two very different things; and this is obviously the case here. * * * All the evidence indicates that under existing conditions the railways are approaching the limit of what it practicable for them to do."

WAR BOARD ENCOURAGES USE OF MOTOR TRUCKS

On November 15 the Railroads' War Board issued Bulletin 42 to all railroads, containing fourteen suggestions for expediting transportation and relieving shortages, the eleventh of which read: "Encourage the use of motor trucks and trolley lines for handling short-haul freight."

This statement at once disposes of the claim that motor truck transportation will injure the railroads by competition. Motor trucks for short hauls merely relieve the railways of that portion of their business which most reduces their effectiveness in moving car-load shipments of long-haul commodities, which is productive of terminal congestion, and from which they derive the least revenue. The railroads are doing their utmost to keep freight moving, but the volume is too great. But they realize the vital necessity that the relief measures be found because they know that upon transportation rests the major burden of war preparations and military maintenance. The problem is squarely placed before the public to provide the relief.

Cleveland Guardsmen Out for Spin Over One of the Brick Paved Roads Which Demonstrate the Efficiency of the Brick Highway for Increasing the Efficiency of the Country in Promoting the War.

We have the highways in better or worse condition for this service, but whatever their condition, we should make it a guiding principle to ship nothing by railway that can possibly be sent over the highway. Approximately 50 per cent. of present freight traffic is now directly connected with war maintenance and within the coming year it is expected that this amount will rise to 75 per cent. W. A. Alsdorf, secretary of the Ohio Good Roads Federation, recently said: "If the war is not won in six months, virtually every private shipper will be forced to send his freight over the highways."

CLEVELAND-AKRON HIGHWAY GOOD EXAMPLE

Let the Cleveland-Akron highway in Ohio serve as an example of short-haul relief. In a recent 72-hour traffic survey, 504 trucks were observed in 32 hours. Twenty-eight different commodities were recorded, aggregating 890 tons. If freight cars had been used, 32 would have been required. But relief was afforded equivalent to dispatching one car an hour alternately from Cleveland to Akron and from Akron to Cleveland. This traffic also was entirely spontaneous; it was entirely without any encouragement to make use of the advantage other than the potential opportunity.

A motor truck traffic of sixteen vehicles an hour is far below the capacity of a substantial highway. If the traffic were to be at the rate of one vehicle a minute, there can be transported between 6:00 A. M. and 10:00 P. M., 7,200 tons of freight between Akron and Cleveland. For every thirty days there is then relief at the rate of 315 train loads, the equivalent of five trains a day each way.

ONE WEEK'S OBSERVATIONS

Observations were made on this road by J. A. Meacham and H. W. Peterjohn, of Case School of Applied Science, Cleveland, Ohio. Discussing their observations, the investigators said: "The tonnage of freight transported over the Cleveland-Akron Highway has increased 140 per cent. in nine months. A traffic census taken for the week of March 18 to 24 inclusive, showed a total of 5,014 tons actually moved in loaded vehicles as against tonnage at the rate of 2,048 a week as found in the census of the National Paving Brick Manufacturers' Association, May 18 to 21, inclusive, 1917.

"New passenger cars on the way to delivery over the road to practically every eastern and southern state numbered 1,354. New trucks being delivered by highway were 471. Since usually but two motor vehicles are loaded on a freight car there was a saving in rail equipment here of 913 freight cars.

LARGE SAVING IN RAIL EQUIPMENT.

"Freight was transported in 1,349 loaded motor trucks of five, three and one and one-half tons capacity amounting to 5,014 tons. Based on an average of 27.1 tons of goods that are ordinarily shipped in a loaded freight car the saving in rail equipment by highway transport of freight was therefore 188 freight cars.

"The total saving in rail equipment by delivering motor vehicles by highway and by the freight that was transported by motor trucks consequently was 1,011 freight cars.

"The census was taken at Stow Corners, Ohio, where the main highway from Cleveland to Akron branches to the east and west. The westerly turn leads to Cuyahoga Falls and Akron; to the east line Kent, Ravenna, Youngstown and Pittsburgh. The easterly branch is therefore the main line between the Northern Middle West and the seaboard.

"Freight on the westerly branch is purely local between Cleveland and Akron and this amounted, in both directions, to 2,238 tons. The balance of 2,762 tons was therefore from or to Akron and these cities eastward or from or to Cleveland from the same cities.

It Is a Duty and a Privilege to Buy a Liberty Bond.

"Thru co-operation of officials of three railroads, we are able to report a total of 6,630 tons of freight shipped over the three railroads during the week, compared with 5,000 tons by highways. This total includes 4,870 tons shipped directly from or to Cleveland or Akron as compared with 2,238 tons, or forty-six per cent., shipped by highway. The balance of 1,760 rail tonnage was shipped from or to Cleveland or Akron and intermediate stations, which it is to be noted, with the exception of Youngstown and points east are on the lines of at least one of the three railroads.

ESTIMATED CAR RELIEF

"Comparing estimated car relief using 27.1 tons per loaded car, the railroads used 245 cars as compared with 188 saved by the highway excluding saving by road delivery of cars and trucks; including this, 1,101. The total relief in March against the relief in May, 1917, shows an increase of 730 per cent., including delivery saving.

"In all 13,975 vehicles were observed in the week, of which 1,800 or 12.9 per cent. were commercial motor vehicles. The total observed traffic for the three-day census of May, 1917, was 9,804 of which 507 or 5.2 per cent. were commercial vehicles, increasing 7.7 per cent.

"If all trucks observed in March had been loaded to capacity, 6,880 tons would have been moved. A tonnage efficiency of 72.6 per cent. or the percentage of freight carrying capacity observed during the census that was actually loaded, is indicated. The tonnage efficiency nine months ago was but 57.5 per cent. on the same basis."

To build an enduring commercial highway between two cities fifty miles apart requires the loan of 5,000 single freight car trips if all the materials for the road are imported. This assumes a monolithic brick highway 18 feet wide, 4-inch brick laid on 4-inch concrete, without curbing. After the road is built, the original loan of cars is repaid in relief in 35 days, and for every 30 days thereafter on the truck a minute basis, the same 315 train loads can be shipped. Reproduce these illustrations in general application thruout the country and transportation shortage is a thing of the past.

One of the Best Demonstrations of the Importance of Paved Highways In Relieving Freight Congestion on Railroads Is Indicated in the Observations on the Cleveland-Akron Highway.

Daily reports are forthcoming of new enterprises making use of highways for commercial transportation; the highway engineer is seeing his functions expanded from merely those of a technical capacity in design and construction to a new field wherein he becomes a highway transportation engineer. In his new relation the element of traffic becomes more significant. The factor of economic service is introduced.

One Week's Observation on This Road Showed That the Highway Tonnage Was More Than 75 Per Cent. of the Tonnage by Rail from Cleveland to Akron and That the Tonnage Efficiency of Trucks Has Increased More Than 9 Per Cent. in Nine Months.

The value of traffic censuses as measuring conditions at the moment and affording a basis for estimating future traffic is widely expounded. There is, however, little beyond a general value in the theory. There is no accurate basis of correlating the results of traffic surveys and the type of improvement actually to be chosen. Thus we find not less than five or six different types of surfacing on one road, bearing the same character of traffic thruout its length. A theory which brings such a diversity of results can have little of scientific merit to recommend it.

WEIGHT OF VEHICLES PARAMOUNT

The commercial use of highways forces a readjustment in our views of traffic itself, counting and classifying traffic means little in itself. The weight of vehicles becomes paramount. Heretofore, practical recognition of vehicular weights has come from legislative rather than from scientific bodies. Nearly all laws restricting weights, however, have had the effect of denying the use of highways to a character of service that the present transportation predicament of the country renders essential to be encouraged. The basis of this legislative restriction seems to be that type of road improvement which is cut into and rutted by heavy traffic—traffic that represents a practical carrying unit.

These types which are structurally incapable of becoming rutted or broken up are placed in the same class by the law. The situation is exactly analogous to what would obtain if railroad engine and car weights were to be restricted to the load bearing capacity of rails 60 pounds to the yard laid in a cinder ballast, when there are thousands of miles of railroad line built of 120-pound rails, rock ballasted, that are particularly intended for the heaviest rolling stock.

Railroad engineers, by practice, have demonstrated that they have a clearer grasp of what is meant by building a road to meet the traffic than have highway engineers. They know the economy of hauling in the larger units and so they correspondingly increase the strength of their road beds and bridges to accommodate more economical hauling.

SHOULD HAVE UNIFORM REGULATION SYSTEM

Under the new conception, a highway represents a potential transportation asset belonging to the public. There should then be a concerted move on the part of the public and its officials to encourage the use of the road up to the limit of its capacity. In other words, we must "dig up the business for our roads" and adjust our view point of their functions to this attitude. Our highways will then be classified as 1-ton roads, 3-ton roads or 5-ton roads and a uniform system of regulation adopted which encourages, not discourages use.

At the outset of applying this program, there are thousands of roads whose capacity of commercial transportation is limited by the particular unfitness of a few miles, either unimproved or once improved and allowed to deteriorate. Bringing these roads into serviceable condition suggests itself as the first step.

Many roads are adequately surfaced, but bridges and culverts are weak or defective. The experience of the Goodyear Company, of Akron, Ohio, in projecting their truck line from Akron to Boston illustrates this handicap. Because of weak bridges this company was unable to make use of the most desirable route—that thru Cleveland, Buffalo and Albany—in spite of the fact that the distance is less, the grades easier and the general character of the road surface superior. Consequently they were forced to choose a road having twenty miles of unimproved clay and three mountain ranges to cross, thru which an average speed of only six miles an hour has been possible. The construction of new bridges and culverts and strengthening those that are weak has been a frequent subject of discussion, but this is now a time for action rather than prolonged argument.

SAVING IN TIME REPAYS EFFORT IN MAINTENANCE

The great need for usable highways suggests an orderly progress for improvement in 1918, first connecting the gaps in improved roads, second proceeding to the improvement of main highways between important centers for commercial transportation, and third, extending as rapidly as possible road improvements in farming country as an aid to the marketing of crops, and without which increased farm production is virtually prohibited.

The substitution of legislative encouragement for restriction and the creation of endeavors to secure a wider use of highways are esential.

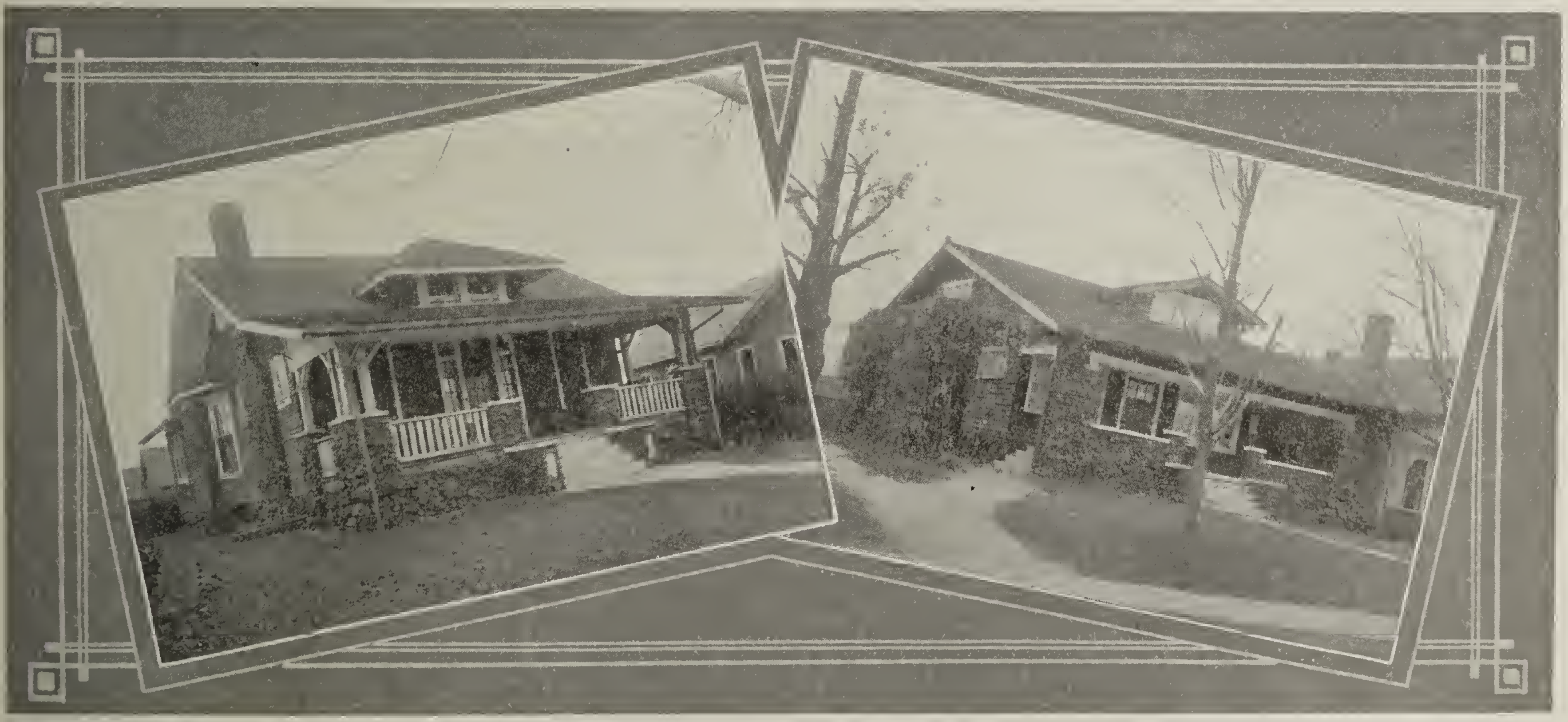
The experience of the Goodyear Tire & Rubber Co. previously cited shows that the cost of motor truck hauling to them has been less than the cost of express shipping. The saving in time over express and freight transportation has more than repaid the effort. The public generally will be in a position to take advantage of highway shipping once it appreciates the gravity of the situation which calls for relief, and the asset to be found in its highways.

* * *

OVER-BURNED BRICK PUT TO NOVEL USE

IN THE PAST, when a kiln of face brick was over-burned to such an extent that all the brick were stuck together and the kiln had to be dynamited before it could be emptied, the clusters of brick were relegated to the dump pile and considered a total loss.

Not so now, however, for it has been the good fortune of an Evansville (Ind.) architect to conceive the idea of using this over-burned product in a novel porch construction and what was heretofore considered waste material, fit for nothing but the dump heap, is now almost looked upon as a luxury as far as architectural beauty of design is concerned. No longer need the superintendent sorrowfully consign his over-burned face brick to the "boneyard," for a demand for these clusters is growing. *(Over)*



HINT TO MARRIED MEN: Wm. H. Gifford, Chicago Representative of the Standard Brick Manufacturing Co. of Evansville, Ind., States That the Exterior Surface of These Porch Walls Provides an Excellent Climbing Surface, the Use of Which Makes It Unnecessary to Remove the Shoes in Stealing into the House After 2:00 A. M.

Come Across So That Your Boy Can Go Across.

The idea dawned upon the architect referred to, upon seeing a kiln of brick in this condition, that the clusters could be used advantageously for porch construction; putting his thoughts into action, we can now see the results from the two accompanying illustrations. The brickwork gives an odd appearance to the porch and really adds considerable beauty to the general aspect of the house.

* * *

LIBERTY LOAN ABSORBS INTEREST *in* GOTHAM

WITH EVERY MEMBER of the Building Trades Employers' Association represented by sons, daughters or employes in the American Hun-halting armies in France or at sea, the first week of the third Liberty Loan drive was marked by subscriptions amounting to $602,100.50 with a goal set to exceed the $8,600,000 total subscribed by the building industries of this city in the last loan, despite the fact that the building trades have been foremost among those industries hit hardest by the war, according to The Dow Service Daily Building Reports.

Only six of the thirty-two associations comprising the Building Trades Employers' Association have met, altho meetings will be held practically every night this week until all the organizations have met. The Associated Roofers and Sheet Metal Workers, the Gravel Roofers' Association, the Metal Covered Door Manufacturers and the Metal Ceiling Association subscribed $140,900; the Light Fixture and allied trades took $311,200.50 worth and the Master Painters and Decorators subscribed another $150,000. The Building Trades Employers'. Association has elected Ronald Taylor, president; Fred B. Tuttle, vice-president; Albert N. Chambers, second vice-president; Charles J. Kelly, chairman of the Board of Directors and J. P. Ryan, treasurer.

LIBERTY LOAN BOOSTED BY BUILDING TRADES

The enthusiasm with which the building trades are going into the present Liberty Loan is attributed to a large degree to the fact that the administration has made it possible for all building interests to figure government operations on a competitive basis save only that of the War Department, where, however, any contractor with his own plant and sufficient resources to positively carry out the work he undertakes, can have his name listed for work on a cost plus basis. Assurances were brought back from the capital this week by a prominent building material manufacturer that no particular type of construction would be barred. In other words, no material or form of construction will be given preference over any other kind, so long as a good, permanent type of building can be erected that will be a salable structure after the war. This includes even reinforced concrete and poured cement for housing construction, which it was feared, would be considered by the authorities as bordering upon experimental building assembly. It is the intention of the Government to encourage contractors to figure government construction work, even tho they heretofore have not done that kind of construction and plans and specifications are being made available for them both here and in Washington.

NEW CONSTRUCTION ERA AT HAND

With the idea of bringing the new conditions affecting the building industry to a closer understanding among the contracting interests of this vicinity, the annual dinner of the Building Trades Employers' Credit Association, to be held in the Hotel McAlpin on Saturday night, April 27, at which time it is hoped Governor Whitman will be present and speak, is to be made the occasion of pointing the new construction and realty era at hand. H. S. Gaines, vice-president of the National Cement Manufacturers' Protective Association; Audley Clarke, president of the Association, William A. Prendergast, formerly comptroller of the city of New York and Allen E. Beals, of the Allen E. Beals Corporation, publishers of The Dow Service Daily Building Reports, will explain the relationship that construction and building has in winning the war and in keeping the war won. Mr. Beals' topic will be "The Web the War is Weaving for Builders."

In the meantime evidence is accumulating that building material prices are still below their top level, unless adequate coal supplies are given to the manufacturing plants. Portland cement prices are sure to advance to higher levels unless more coal can be obtained in zones 1 and 2 and the prospects for more fuel are not particularly bright. Eleven shipments in this commodity reflect the heavy orders that preceded the recent price advance and movements will continue to be heavy during April and May with a slump in June if the coal situation is relieved. The trade is being advised to take advantage of present quotations. The same conditions governing cement are applicable in the matter of plate and window glass, except that no change in price is looked for until after April 24. If the price situation changes after that date it will be on a higher level.

COMMON BRICK PRICES UNSTABLE

Common brick was in a ragged market with some brick selling as low as $9 a thousand wholesale. The market level on good brick was $9.50 to $10 with no Raritan brick for sale. The lower price was brought on several loads that had been in the market for some time and the owners decided to sell rather than have demurrage pile up against the cargoes. At noon April 13 there were 6,300,000 brick on hand in the New York market with none scheduled to arrive before the following day. Second-hand brick is quoted at $12 per load of 1,500 for delivery below 42nd street; $12.50 between 42nd street and 110th street and $13.00 for deliveries in Long Island City. There also is a large quantity of hydraulic pressed enameled white brick available for immediate delivery in New York.

In the general building material market there are at the moment fewer price changes than have featured the lists for almost six months. The industry seems to be awaiting the changes that are expected to be reported in the metals market in the near future and in the meantime demand is such as to keep supplies comfortably moving so as not to affect prices upward. Some lines have actually dropped, notably lead and linseed oil and in the absence of heavy private work and the increasing preponderance of government work, the disposition seems to be to hold levels as low as possible for government acceptance.

The thirty-seventh annual election of officers of the Building Material Exchange resulted in making Frederick A. Rose, of the Greater New York Brick Co., president; John W. Ruth, vice-president; William C. Morton, treasurer and the above with George A. Molitor, John M. Campbell, Irving J. Rose, Edward D. King, H. P. Brown, Allen J. Hule, Elliott Smith, the retiring president, Thomas Cumming, H. M. Halstead and Edwin B. Morse, trustees.

Liberty Bonds Are the Supreme Investment.

FIRE BRICK GETS PRIORITY

Is Only Clay Product Mentioned in Preference List No. 1 Just Issued by the Priorities Board of the War Industries Board

THE PRIORITIES BOARD of the War Industries Board has adopted Preference List No. 1, for the guidance of all governmental agencies in the supply and distribution by rail or water of coal and coke. It is interesting to note that of all clay products, fire brick is the only one given a place on this list.

While the list speaks for itself, it is proper to say that the Board has not undertaken to classify any industry as non-essential or at this time to limit the quantity of fuel which any particular industry or plant should receive. The Board has, however, listed certain industries whose operation is of exceptional importance, measured by the extent of their direct or indirect contribution either toward winning the war or toward promoting the national welfare, and these industries will be accorded preferential treatment by the Fuel Administration in the distribution of coal and coke, and also in the transportation of such coal and coke by the railroads.

PLAN COVERS RAW MATERIALS

This same plan will be followed in according preferential treatment to war industries and plants in the transportation of raw materials and supplies required by them in their manufacturing operations, so that they may not be delayed or hampered in complying with priority orders issued against them governing their products.

Preference List No. 1 is not complete in itself, but it will be noted that provision is made for certifying additional classes of industries, and also individual plants whose operations are necessary as a war measure.

In determining what industries or plants are entitled to be certified, two factors will control: (1) The relative urgency of the uses or purposes for which the product of the plant is utilized; and (2) the per cent. of the product of the plant utilized in war work, direct or indirect, or work of exceptional or national importance. No plant, a very substantial per cent. of whose product is not of exceptional importance, can be accorded preferential treatment.

PRIORITIES BOARD PREFERENCE LIST NO. 1

In pursuance of a resolution unanimously adopted by the Priorities Board at a meeting held April 6, 1918, the following preference list of classes of industries, whose operation as a war measure is of exceptional importance, is promulgated and published for the guidance of all agencies of the United States Government in the supply and distribution of coal and coke, and in the supply of transportation by rail and water for the movement of coal and coke to said industries.

The priorities commissioner shall, under the direction of and with the approval of the Priorities Board, certify additional classes of industries, and also certify individual plants whose operation as a war measure is of exceptional importance, which industries and plants when so certified shall be automatically included in this Preference List, which shall be amended or revised from time to time by action of the Priorities Board to meet changing conditions.

No distinction is made between any of the industries or plants which are or may be included in this Preference List, and no significance should attach to the order in which the industries or plants appear in the list.

Aircraft.—Plants engaged exclusively in manufacturing aircraft or supplies and equipment therefor.

Ammunition.—Plants engaged in the manufacture of ammunition for the United States Government and the allies.

Army and Navy cantonments and camps.

Arms (small).—Plants engaged in manufacturing small arms for United States Government and for the allies.

Chemicals.—Plants engaged exclusively in manufacturing chemicals.

Coke plants.

Domestic consumers.

Electrical equipment.—Plants manufacturing same.

Electrodes.—Plants producing electrodes.

Explosives.—Plants manufacturing explosives.

Farm Implements.—Manufacturers exclusively of agricultural implements and farm-operating equipment.

FOOD AND FOOD PLANTS

Feed.—Plants producing feed.

Ferroalloys.—Plants producing.

Fertilizers.—Manufacturers of fertilizers.

Fire Brick.—Plants producing exclusively.

Food.—Plants manufacturing, milling, preparing, refining, preserving, and wholesaling food for human consumption.

Food Containers.—Manufacturers of tin and glass containers and manufacturers exclusively of other food containers.

Gas.—Gas-producing plants.

Gas.—Plants manufacturing exclusively gas-producing machinery.

Guns (large).—Plants manufacturing same.

Hemp, Jute, and Cotton Bags.—Plants manufacturing exclusively hemp, jute, and cotton bags.

Insecticides.—Manufacturers exclusively of insecticides and fungicides.

Iron and Steel.—Blast furnaces and foundries.

Laundries.

MACHINE TOOL MAKERS

Machine Tools.—Plants manufacturing machine tools.

Mines.

Mines.—Plants engaged exclusively in manufacturing mining tools and equipment.

Newspapers and Periodicals.—Plants printing and publishing exclusively newspapers and periodicals.

Oil—Refineries of both mineral and vegetable oils.

Oil Production.—Plants manufacturing exclusively oil-well equipment.

Public Institutions and Buildings.

Public Utilities.

Railways.

Railways.—Plants manufacturing locomotives, freight cars, and rails, and other plants engaged exclusively in manufacture of railway supplies.

Refrigeration.—Refrigeration for food and exclusive ice-producing plants.

Seeds.—Producers or wholesalers of seeds (except flower seeds).

SHIPS AND SHIP PLANTS

Ships (bunker coal).—Not including pleasure craft.

Ships.—Plants engaged exclusively in building ships (not including pleasure craft) or in manufacturing exclusively supplies and equipment therefor.

Soap.—Manufacturing of soap.

Steel.—Steel plants and rolling mills.

Tanners.—Tanning plants, save for patent leather.

Tanning Extracts.—Plants manufacturing tanning extracts.

Tin Plate.—Manufacturers of tin plate.

Twine (binder) and Rope.—Plants producing exclusively binder twine and rope, also wire rope.

Garfield Warns of Fuel Famine

Fuel Administrator Garfield sounded warning in a formal statement recently that "unless there is immediate and material improvement in car supply efficiency, the country faces the certainty of a serious shortage of bituminous coal."

The mines of the country showed an average loss in production due to car shortage of 23.3 per cent. for the last week in March, the fuel administrator said. In the fields of Illinois, Indiana and Ohio the average loss due to car shortage was 22.6 per cent.

Dr. Garfield's statement places the blame squarely on Director General of Railroads McAdoo for the falling off in coal production and absolved the fuel administration and coal producing interests from any responsibility.

The BIG AD. *for* BRICK *in* WASHINGTON

LUMBER FOR SHIPS and much needed freight cars, and clay products for building construction, releasing carpenters for ship and car building, should be the war cry of the clay products industry.

WHY CLAY SHOULD BE THE BUILDING MATERIAL

As was anticipated, ships and ship building was the big theme of the sixth annual meeting of the United States Chamber of Commerce, held in Chicago, April 9 to 12. Anything that stands in the way of speeding up the building of our merchant marine was denounced, but why not go a step further? Using lumber and carpenters to build structures of any description at this time, we believe, is interfering with the building of ships and therefore should be condemned. Moreover, coal used in burning brick and tile which are resting in the manufacturer's yard is wasted fuel unless these products are utilized. This is another argument in favor of clay products as *the* building material in the present international crisis.

A Suggestion

¶ *In view of the contemplated removal of the American Face Brick Association's office to Washington, D. C., for the period of the war, a brick house should be erected as an advertisement to the whole nation that brick is the logical material with which to build in the present war crisis because of the necessity for conserving lumber and carpenter labor for shipbuilding; eliminating some of the railroad traffic due to the hauling of lumber long distances, and also because of the crying need for cutting down the annual fire loss this year as a measure of war economy.*

What Do You Think About It?

Since the suggestion by Wm. H. Gifford, manager brick department, Wisconsin Lime and Cement Co., Chicago, that a brick house be built at Washington for the secretary of the American Face Brick Association and other branches of the clay products industry, a number of manufacturers have written, expressing their approval of the idea. Several of these letters were quoted in the April 9 issue of *Brick and Clay Record.* Here are two more:

A GOOD SUGGESTION

"We are not members of the above named association; however, we are in favor of many things which the association is doing and trying to do, and we, too, are willing to put something into this project which you suggest, because we feel that it is a good suggestion and should be acted upon, provided the cost would not be prohibitive, and in any event, the manufacturers should get this back in advertising value if the house could not be sold to advantage when the time arrived to sell it." *C. N. Miller, Treasurer-Manager, Colonial Pressed Brick Co., Mogadore, Ohio.*

THINKS PAVING BRICK SHOULD JOIN IN

"Referring to the proposition of building a handsome and attractive brick building at Washington for office and headquarters of the brick interests as proposed by W. H. Gifford, in your issue of March 26, wish to state that this appeals to us as being well worthy of serious consideration. Particularly do we favor the idea that the paving brick interests should unite with the face brick people in putting this over. We sincerely hope that the scheme will be carried out as proposed."—*John Andres, Standard Brick Manufacturing Co.*

Remember, don't let "George" do it all. A number of clay products manufacturers have written in expressing their approval. We have not heard from you. Why not? Don't you like the idea? If so, tell us for we will welcome your letter as much as one which applauds the scheme. Perhaps someone has a suggestion to make with a view toward getting something definite started in connection with the erection of this house. If so, let us have your ideas.

Come Across So That Your Boy Can Go Across.

BRICK *in* NEW U. S. CODE

Burned Clay Gets Favorable Consideration in Standards of Construction for Permanent Houses for Industrial Workers

LAWRENCE VEILLER, secretary of the National Housing Association has drawn up a general framework of standards which are in effect a federal housing code, regulating the construction of permanent houses for industrial workers erected under the auspices of the government.

The consideration which has been given clay products in this code is of the utmost importance and therefore an epitome will be given of that part which is of the most interest.

NINE TYPES OF BUILDINGS

There are nine types of houses mentioned, namely, single family house, two family house, single family house with rooms for lodgers or boarders, lodging house for men, hotel for men, lodging house for women, hotel for women, tenement house and boarding house.

Under general provisions the materials for exterior walls are dependent on local supplies, brick, terra cotta, stone or concrete preferred. It is presumed that by "terra cotta" hollow clay building tile is meant.

Under special provisions for houses of types one, two and three, brick, terra cotta, stone, or concrete are specified as preferable, but wood frame clapboarded, shingled or stuccoed is permitted for detached or semi-detached houses not over two and one-half stories high. Party walls between attached houses in rows or groups to be of brick, terra cotta, stone or concrete.

CLAY PRODUCTS GENEROUSLY SPECIFIED

Under special provisions for types four and five, the following materials are recommended for exterior walls: brick, terra cotta, stone, or concrete, except that wood frame will be accepted for one story buildings. The same provisions apply for types six and seven.

Type eight buildings, namely, tenement houses, if over three stories high, are to be fire resistant thruout; if over two stories high, a non-fireproof building, the area of which exceeds three thousand square feet, to be divided by fireproof walls of brick, terra cotta, stone or concrete, into an area not exceeding approximately three thousand square feet each. Other requirements in the way of fireproofing, covering this type of building, are mentioned, involving the use of clay products. The exterior walls of such buildings are to be of brick, terra cotta, stone or concrete.

In the case of type nine buildings, that is, boarding houses, brick, terra cotta, stone or concrete are preferred for the exterior walls, but wood frame clapboarded, shingled or stuccoed is permitted for detached or semi-detached houses not over two stories high.

GOVERNMENT'S GIGANTIC HOUSING PROGRAM

In a general way there are three channels thru which the government is working, or will work, to supply housing accommodations for the many thousands of workers who are or will be engaged in war manufacture. The first of these, because of its clearly defined character and the fact that the money is in hand with which to prosecute the work, is that of the Emergency Fleet Corporation, of which J. Rogers Flannery is chief of the housing division, which has an appropriation of fifty million dollars with which to build houses for ship yard workers.

Then there are the building operations of the War Department, covered by appropriations for supplying specific articles of war. Under the rulings of the Department, this appropriation covers the cost of anything necessary for the production of its articles. The prime necessity in manufacture is labor. If labor cannot be had unless houses for laborers are built, then the appropriation must be made to cover the housing cost. In this way a vast amount of money not explicitly appropriated for the building of workingmen's homes has been properly diverted to that purpose.

Lastly is the program for the building of homes for workers in other than shipbuilding plants for which a bill appropriating fifty million dollars is before Congress. This money will be expended thru the Department of Labor, of which Otto M. Eidlitz has been selected as general manager of the Department's building program.

THREE HUNDRED MILLIONS FOR OTHER BUILDING

Another large factor in the building business of the government is the work under the direction of the War Industries Board, of which Major W. A. Starrett is chief of the Emergency Construction Committee. This board will expend about three hundred million dollars this year. Of this amount one million dollars will be used for the construction of thirty-one large storage warehouses; a similar amount will be expended on terminals at sea-board cities, and the remainder for powder, gas and high explosive plants.

* * *

Iowa Manufacturers Adopt Trade Acceptance

Members of the Iowa Division of the American Face Brick Association have sent out an announcment to the trade that effective April 15, all settlements for materials sold by the members of the association will be by trade acceptance. An exception is taken in case of discount for cash payment before the fifteenth of the month following date of invoice.

In announcing the innovation, the face brick manufacturers have put out a carefully worded and instructive statement of just what constitutes a trade acceptance and how it operates.

The new plan is causing a great deal of interest in the Iowa field and a number of the tile manufacturers will also adopt it.

The face brick manufacturers state that sales will be made on the following terms:

FACE BRICK

1. 50c per M for cash payment on or before the 15th of the month following date of purchase.

2. If the cash discount is not taken as outlined above, invoices are net and a 30-day trade acceptance is to be given not later than the 15th of the month following date of invoice.

COMMON BRICK

1. 25c per M. for cash payment on or before the 15th of the month following date of purchase.

2. If the cash discount is not taken as outlined above, invoices are net and a 30-day trade acceptance is to be given not later than the 15th of the month following date of invoice.

⁂

Brick Plant Employes in Liberty Parade

The East plant and the Josephine plant of the A. P. Green Fire Brick Co., Mexico, Mo., were closed for an hour on April 8 while the employes of the company marched in a parade to boost the third Liberty Loan.

The Green company's contribution was in four sections, each section being represented by a large float, one of which represented America and the Allies, another carried the service flag of the company, which contains twenty stars, and still another float was occupied by men molding brick. This float carried large signs telling how A. P. Green fire brick are being used in making shrapnel and shells to kill the Huns. Twenty-three of the employes marched in line, bearing a sign showing that they were in Class 1 and awaiting the country's call.

⁂

Prominent Pennsylvania Clay Man Dies

Just as we are about to go to press we have learned the sad news of the death of Alfred Yates, general manager of the Shawmut (Pa.) Paving Brick Works. Mr. Yates was a member of the American Ceramic Society, has been a prominent man in the clayworking industry and has done much constructive work in this field. One of his achievements is the invention of a periodical kiln which he patented several years ago. His death occurred on Wednesday morning, April 17, at his residence, the Homestead Farm, Bedford, Mass.

⁂

Fire of unknown origin did considerable damage at the plant of the Crookston (Minn.) Brick & Tile Co. The plant has not been in operation for some time.

* * *

HIGH OFFICIALS ADDRESS NATIONAL CHAMBER

"WHAT is not for the common good is not for the good of business," is the message that more than three thousand of America's dominant business executives have carried back to their respective communities, from the sixth annual meeting of the United States Chamber of Commerce, held at Chicago, Ill., April 9 to 12. From every state in the Union had gathered these representatives of a thousand and odd commercial organizations that compose the national chamber, to take up these urgent questions that were demanding solution of America's industry.

R. Goodwyn Rhett, of Charleston, S. C., president of the organization, wasted no time in expressing the complete co-ordination of the new spirit in business—the spirit that is making it a vital, living being, instead of cold, impersonal commercialism—patriotic service in the cause of world democracy.

SECRETARIES DANIELS AND LANE PRESENT

Patriotism that would serve was the need emphasized by both representatives of the president's official family, no matter whether that service take the form of wearing a uniform, contributing to the Liberty Loans, Red Cross work, or maintaining the efficiency of our industrial arm, which must at home, do its share to match step by step the progress of the men abroad.

An earnest plea for merchant ships was a feature of Secretary Daniels' address—not alone ships for war time needs, but ships that, in the reconstruction to follow the war, should search out new trade routes, open new markets, a merchant marine of the first rank, befitting the enormous expansion of our foreign trade that must inevitably come, and for the protection of this great fleet, he prophesied, a navy second to none in size and power.

BRITAIN'S AMBASSADOR SPEAKS

England as it nears the end of the fourth year of the war was the subject chosen by Earl Reading for his address on Thursday evening, April 11, and the picture he drew of conditions across the Atlantic is of the highest interest to us who are today entering upon the same road as that country has traveled.

High praise of the efficiency of the British navy was embodied in Earl Reading's figures of one hundred and thirty million tons of materials safely transported, of thirteen millions of men convoyed with the loss of but thirty-five hundred. Equally impressive were the figures of women's part in the war, of over a million employed in the ammunition factories, of hundreds of thousands in the chemical and explosives factories, and of unknown numbers at work on the farms.

ENGLAND SPENDS $300 PER HEAD

Turning to finance, Earl Reading emphasized the three and one-half billion dollars raised in 1917, the annual expenditures of thirteen billion dollars this year, the fact that this is at the ratio of three hundred dollars per head of population and that a similar ratio in this country would mean annual expenditures of twenty-seven billion dollars, as showing how vast the amount of untouched wealth was on the side of the allies.

Of the outcome of the war, the earl had no doubt, particularly since the entry of America into the struggle, and in glowing terms he depicted the value of America's contributions in loans that had stapilized exchange, in food, in our navy, and in our men who had taken their place in France.

Tuesday afternoon, April 9, President Rhett called to order the meeting of the National Councillors, and having passed upon the program of the annual meeting and selected the committee to nominate the successors to the thirteen directors whose terms expired, the meeting turned to the reports of the active committees.

The following three days, Wednesday, Thursday and Friday, April 10, 11 and 12, were filled up by a huge program which dealt with a host of subjects such as government organization in relationship to business in war; finance; railroads and highway transportation; shipping, etc.

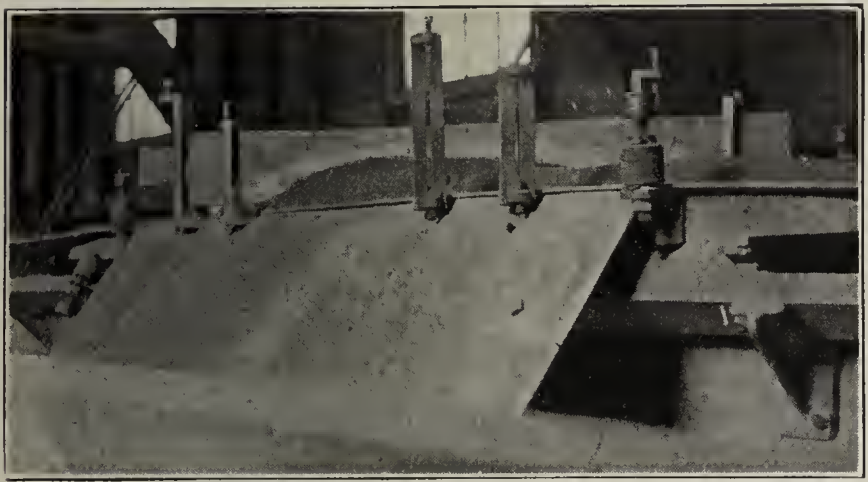
Harry A. Wheeler, of Chicago, was unanimously elected president of the national chamber for the ensuing year.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Method of Distributing Clay

The apparatus pictured in the accompanying view is used in the clay storage shed of the Decatur (Ill.) Brick Co. to remove the clay from the conveyor belt. The clay is ground in ring pulverizers from which it is carried to the screens and the sufficiently ground material conducted by means of chutes to the conveyor belt running across the length of the storage shed. The belt is about eighteen inches wide.



The Clay on the Conveyor Belt Strikes the Cross Piece Shown in the Above View and is Pushed Off Onto a Storage Pile Beneath.

The apparatus consists simply of a thin sheet of iron set diagonally across the belt in such a manner that as the clay reaches this point it is caused to be pushed off and falls upon a pile below. The metal piece may be set at a bias in either direction depending upon which side it is desired to deposit the ground material. The apparatus may also be placed at any point where the clay is to be stored.

* * *

Friction Clutch Advantages

Where a plant is not operating at full capacity all over, all the time, friction clutches are a convenience and an economy factor. Clutches may be so arranged as to cut off a whole department or portion of a department. Several of them may be placed on a single line shaft, if thought desirable. In that way, almost any part of the power may be thrown off or on instantly. It does no harm to place them in the main shaft, even. To operate an empty machine is about as costly as operating the same machine in actual use. Hence the power saving that accompanies the use of friction clutches. In the old days we threw out machines by throwing off the belt. But we preferred to leave the belt on because of the difficulty and danger of throwing a belt on a rapidly running pulley. So, we threw the belt off only when the machine or machines were to be idle for several days or weeks. With the advent of friction clutches and their attendant safety and handiness, these difficulties were removed. If you will just test out a machine running "empty" and then "full" you will understand why so many plants are installing a liberal scattering of friction clutches. —*W. F. Schaphorst.*

The Convenience of Split Pulleys

There is no question but that split pulleys are great time-savers. Solid pulleys are still used a great deal. They are good on high speed work and in places where they can be slipped off the shaft easily. But where it is desired to put a pulley on the middle of a shaft on which there are several other pulleys already tightly keyed in place, all of which would have to be removed in order to put the solid pulley in place, it is clearly evident that it might cost more than the first cost of a split pulley to get the solid pulley on and the other pulleys back in place. Wood split pulleys need tightening every once in a while when new, on account of shrinkage in the pulley and in the bushing. It is important to keep split pulleys (and all other kinds of pulleys) from slipping on the shaft. Each per cent. of slip remember, costs one per cent. of the coal pile.—*W. F. Schaphorst.*

* * *

Dead Bottom Fire Box Used on Fire Brick Kilns

The view accompanying this item is a snap shot taken of a fire box on a round down-draft kiln used for burning fire brick on the Daguscahonda (Pa.) plant of the Elk Fire Brick Co. The kilns upon which these boxes are used have a ring flue system bottom and multiple stacks and are giving very good burns.

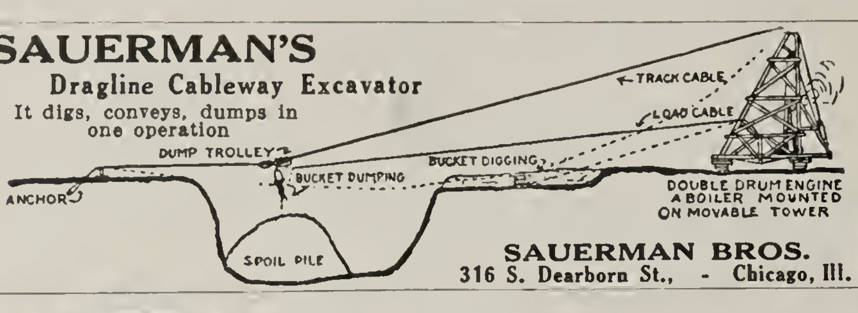
This Firebox Is Well Liked by the Elk Fire Brick Co., Who Have it on all of Their Round Down Draft Kilns in Which Fire Brick are Burned.

The fire boxes measure 24 by 36 inches and are known

For Safety, Invest in Liberty Bonds.

Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



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316 S. Dearborn St., - Chicago, Ill.

CLARAGE
FANS-BLOWERS
HEATERS-ENGINES
KALAMAZOO-MICH
NEW YORK - CLEVELAND - CHICAGO

TO STOP advertising to save money is like stopping a clock to save time.
—*The Little News.*

The House of Taylor

IN THE HEART OF THINGS

Hotel Martinique
Broadway, 32ndSt., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business
157 Pleasant Rooms with Private Bath
$2.50 Per Day
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day
Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate

400 Baths
600 Rooms

ABSOLUTELY FIREPROOF
HOTEL CHELSEA
West Twenty-third Street at Seventh Avenue, New York City.
500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
Room with private bath, $2.00.
Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
To Reach Hotel Chelsea.
From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

as "Pigeon Hack" boxes. They are dead bottom furnaces and, as can be seen on the view, they have a fire brick arch constructed just below the fire hole. This makes this type of fire box similar in construction to the furnace described and illustrated as figure 7, in professor C. B. Harrop's article which appeared on page 583 of the March 26, 1918, issue of *Brick and Clay Record.*

* * *

Depreciation of Kilns

The depreciation of kilns is a subject about which much can be said and written without it coinciding exactly with the actual practice on some plants. It varies greatly with each individual kiln and depends entirely upon the manner in which the kiln was built, in regard to the quality of material used and the care taken in its construction, as well as the type of construction. Then again the kind of usage the kiln receives also affects the rate of depreciation. Thus a kiln burning paving block at a temperature of Cone 6 (2,282 deg. Fahr.) will depreciate far more rapidly than a kiln built for the burning of drain tile or similar goods goods at a temperature of Cone 08 (1,844 deg. Fahr.).

The experience of many clay plant owners has been as follows, in regard to depreciation of various types of kilns. With continuous kilns much depends upon the type or design of kiln in use. The chamber producer gas kiln, such as the Raymond gas producer kiln and the Richardson gas producer kiln, for instance, which are fired from one side only, have their greatest depreciation in the crown. Several instances are on record where these crowns have had to be replaced after two or three years' use. This is usually due to the fact that one side of the main crown stands all the abuse of the flame from the gas burners. This side of the kiln gets hotter much quicker than the other side, giving the crown an unequal expansion and subjecting it to a severe strain each time the chamber is burned. In this type of kiln the crown is mostly at fault and compared to the more expensive floor, it is not the most costly part of the kiln to be replaced should this be required. Taking into consideration that a new crown is required every three or four years, this type of kiln should have about fifteen per cent. written off for depreciation each year.

CROWN SUBJECTED TO GREATEST STRAIN

The tunnel type of producer gas fired kiln (not the car tunnel type such as the Didier-March or Dressler) of which there are now a few being operated, is another kiln in which the depreciation is most severe in the crown. The gas is fed at the top thru openings in the crown and the floor of the kiln is solid with no openings. The depreciation of this kiln is nowhere near that of the chamber type, but it cannot be used successfully on high temperature wares such as fire brick, paving block, etc. It is in the construction of this kiln where the difficulties lay; if built properly it will have a long life, but if properly constructed it will not last long. When of good construction its depreciation can be safely figured at eight per cent. each year.

The coal fired continuous kiln of which there are several scattered thruout the country such as the Buhrer, Dunn, Hoffmann, Klose and others, are all top fired kilns. These kilns, like the tunnel continuous producer gas fired kilns, have a long life due to the fact that they are not used on high temperature wares; the temperature required to burn paving blocks and fire brick being beyond the temperature that can be obtained by an all top fired kiln. In this case also the

greatest depreciation is the main crown, and if built good the depreciation can be safely figured at eight per cent.

The Haigh continuous kiln is very closely related to the all top fired continuous kiln with one great exception. It is in reality a side fired kiln, as between eighty and ninety per cent. of the fuel is used at the sides, this percentage varying according to what material is burned. In depreciation it is not like the top fired kilns, the firing doorways being the first part requiring repairs. This again brings one to the point of "when do the repairs begin." On some kilns it begins in three, four, or five years, and then again on others it does not begin until seven or eight years depending upon the construction and the temperature used in burning. Fire brick and paving brick can successfully be burned in this type of kiln without excessive repair costs. For a kiln of this type a depreciation of ten per cent. should be registered each year.

The car tunnel type of continuous kiln such as the Didier-March and Dressler kiln are still in their infancy. Owing to the fact that the temperature at any one part of the kiln is constant at all times there is no strain due to expansion and contraction resulting from large changes in temperature. Hence the crown and other parts if properly constructed will give no trouble for a good length of time. The depreciation of this type of kiln is the lowest of any and it seems that it has a great future in the clayworking industry.

FIREBOXES GIVE TROUBLE ON PERIODIC KILNS

The down-draft kiln, of which there are numerous types such as the Eudaly, Dennis, Snowden, Wilson, etc., are of two kinds, either round down-draft kilns, also known as "bee-hive kilns," or the rectangular down-draft kiln. The fire box construction of these kilns has undergone a great change during recent years. Both of these kinds of kilns show wear and tear first in the fire boxes. They may be and are used for all classes of ware. The depreciation of the round kiln is a little less than that of the rectangular kiln and may be safely placed at ten per cent. On the other hand, the depreciation of a rectangular kiln should be taken at no less than twelve and one-half per cent. It may be well to also state that the crowns will often last as long as fifteen to twenty years, especially on the round kiln where low temperature ware is burned.

The up-draft kiln, commonly known as the Scove, clamp, or "Wind Bagger" kiln is one of the commonest in use. It has no crown and is made up of four walls; thus depreciation is extremely low. The wear and tear on this type of kiln is almost entirely in the fire boxes altho occasionally a wall does fall in. It is very cheap in construction and is suitable only for the manufacture of common brick. Depreciation of this type of kiln may be placed at about five per cent. a year.

⁂

Robert D. Landrum Writes Book on Enamels

Robert D. Landrum, manager of the service department of the Harshaw Fuller & Goodwin Co., of Cleveland, Ohio, is the author of a splendid and interesting book entitled "Enamels." It contains eight different articles on enameling subjects and consists of 106 pages. A handy table for ceramic men is given at the end of the volume. This book can undoubtedly be obtained by writing to the above concern.

A Crescent joint saves in three ways: Lost production of idle machine. Skilled labor of operative. Time of man repairing belt.

CRESCENT
BELT FASTENERS

are standard equipment in shops where little leaks are recognized as the source of big trouble.

Crescent Belt Fastener Co.
381 Fourth Ave. New York, N. Y.

GUARD YOUR PLANT
against Fire, Vandalism and Spoiled Ware

Your Night Burner is Only Human

Unless some check is kept upon him he will yield to the legions of slumber, exposing the plant to theft and fire, and letting the kiln fires burn low. Protect yourself against the loss that his negligence may cause. You can do it without expense with the

HARDINGE WATCHMAN'S CLOCK
which will pay for itself in less than one year by the 5% reduction which it effects in the base rates of your insurance

HARDINGE BROS., INC.
1760 BERTEAU AVE.
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Padded Gears
If You Use
Rino Gear Shield

the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,

The Ohio Filler and Shield Co.
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Hill Friction Clutch Pulley
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Hill Friction Clutches
Collar Oiling Bearings
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Complete Power Transmission Machinery Equipments

Catalogs upon Request

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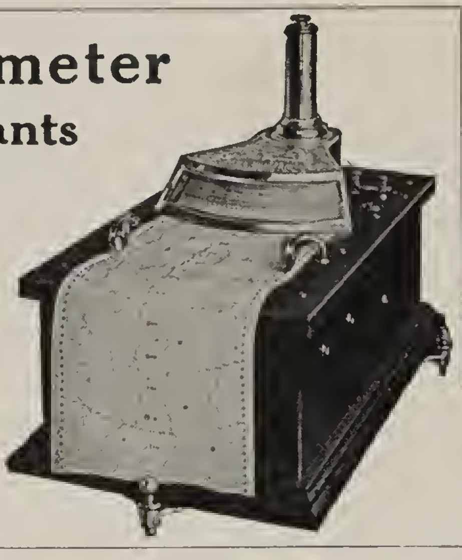

Price Pyrometer on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Send for Bulletin No. 4.

The Sanderson Cyclone Drill Co.
Orrville, Ohio

How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

J. W. Bostick, of Evansville, Ind., president of the West Salem Co.'s brick plant, has been appointed as temporary cashier of the First National Bank of West Salem.

Mr. Nathan Sloan, one of Paterson's (N. J.) most successful brick salesmen, has been devoting considerable of his time to the selling of Liberty Bonds.

R. F. Mestayer has been appointed general manager of the Salmen Brick & Lumber Co., New Orleans, La. Mr. Mestayer was formerly connected with the Chicago Coal & Lumber Co., of that city.

Frederick R. Turton, president of the Refractory Magnesite Co. of San Francisco, Cal., who has spent the greater part of his time this year at Preston, Cal., is in the city for a few days.

F. R. Carter, owner of the Peoria (Ill.) Brick & Tile Co., has presented his son Benjamin F. Carter, a senior at the University of Illinois, Department of Ceramics, with $5,000 worth of stock in the company.

Harry N. Barr, secretary-treasurer of the Michigan Face Brick Co., Grand Rapids, Mich., spent the early part of April in Streator, Ill., with his family, visiting relatives. Mr. Barr is a nephew of C. C. Barr of Streator.

H. A. Plusch, chemist of the Abrasive Co., of Frankford, Pa., gave a lecture on the manufacture of grinding wheels, illustrating his talk with lantern slides, at the recent meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club in Philadelphia.

Will P. Blair, secretary of the National Paving Brick Manufacturers Association, Cleveland, Ohio, has just returned from Chicago, where he attended a meeting of the Chamber of Commerce of the United States, held at the Congress Hotel.

Charles Harrison, of the Gaddis-Harrison Co., Columbus, Ohio, was chairman of the sub-committee on brick, stone and clay products during the recent third Liberty Loan drive. He named a strong committee and subscriptions secured by himself and workers were very gratifying.

Charles I. Vance, who for the last several years has been engaged in the manufacture of drain tile in Columbia City, Ind., has announced his candidacy for the Republican nomination for Recorder of Whitley County. Mr. Vance is widely known thruout the county and pledges, if nominated and elected, to give the people an efficient administration.

Charles L. Tramp, one of the pioneer clay products manufacturers of Iowa, died recently at his home in Audubon. Mr. Tramp had been in the business for more than thirty years but during the last few years had not been active in the direction of the plant. He was seventy-two years old and was the father of the Tramp Brothers of Creston, who are among the largest producers in Southern Iowa. The

Tramp family has now sold its interest in the Audubon plant to a stock company.

D. T. Bowen, who has been connected with the Cleveland (Ohio) Builders Supply Co., for the last five years, has been appointed assistant manager of the terra cotta and brick department. Mr. Bowen is a young man, and classified as a live wire. In his term with the company he had developed a remarkably wide acquaintance, to the extent of knowing nearly every contractor in the district by his first name. It is claimed for Mr. Bowen that few people can equal him in knowledge of the brick end of the clayworking industry, for the period of time he has been identified with the trade.

Albert Bach, 26 years old, son of William F. Bach, shot himself in the heart at the family residence, 2820 Wilson avenue, Chicago, Ill., April 9, while standing in front of the coffin of his stepmother. He died at three o'clock on the morning of April 10, in the Ravenswood Hospital. Members of the family believe he was temporarily insane as a result of the sudden death of his stepmother while she was automobiling with him. The young man's father, who is president of the Bach Brick Co., 2647 Montrose avenue, with another son and relatives, was sitting near the casket when Albert Bach entered and without a word, walked to the front of the casket and shot himself before anyone could interfere. The son was employed as engineer at the Bach brick plant.

Arizona

It has been announced that C. M. Clark will establish a brick yard, with a capacity of 10,000 brick per day, on his property in Bullion Plaza, Globe, Ariz., in the near future. Mr. Clark formerly conducted a brick yard in Globe, but the plant has not been operated for several years.

The Tucson (Ariz.) Pressed Brick Co., has recently increased its force and machinery so that its daily output of pressed brick used in the best construction work in every part of the country, is 23,000 per day. The capacity for the making of wire-cut common brick is now 22,000 a day. It is said, however that the future of the company lies in the manufacture of tile. At the present time the capacity for eight-inch tile is 25,000 a week. The company maintains that one of the possibilities for the application of tiles in construction in Arizona, is the building of silos by farmers and stock raisers generally, and that the tile silo will save the farmer about twenty per cent. in costs. The company intends to make a decided campaign on this one feature of its business. Dyes are now being made for the manufacture of shingle tiles. It is estimated that the use of tile for roofing will become greater with the rise in the price of lumber. Tile made by this company is being used in the construction of the larger addition to the Santa Rita Hotel in Tucson.

California

Thousands of feet of vitrified clay sewer pipe are now being installed in the Calusa Basin for the project of reclaiming the land for rice.

The Board of Public Works of Los Angeles, Cal., is advertising for bids for the construction of vitrified pipe sanitary sewers, aggregating 7,900 feet in length for the West Boulevards and Sixteenth Street district.

The Coast Fire Brick Co., which was recently incorporated in Oakland, Cal., has bought certain secret formulas

ORIGINAL Boss SYSTEM COMMON SENSE APPLIED TO Drying and Burning ORIGINAL Boss SYSTEM

Boss Ten-Hour Dryer

Would you like to really dry your brick and do it in half less time?

Boss System of Burning Brick

Would you like to improve the quality of your brick and reduce your cost of burning?

Then write for information and we'll SHOW YOU HOW!

JOHN C. BOSS COMPANY
Monger Building - Elkhart, Indiana

ARE YOU UNDER-INSURED?

Your plant is worth more today than when it was built—do you know how much more?

Our appraisal will give you its **Replacement** value. Here's what Mr. G. H. Galvin, gen. mgr. of the Rockford (Iowa) Brick and Tile Co., says about our service and its value:

"We acknowledge receipt of your appraisal of our factory and wish to express our appreciation of the very fine work given us. In our opinion the appraisers you sent us were experts and your style of presentation, methods of summarization, and arrangement is very pleasing. We find that we have not been carrying enough fire insurance by at least $20,000.00, and for this reason your appraisal is considered very valuable."

Send us description of your plant, kilns, etc., and approximate value of buildings. We will forward literature and inform you what our charges for appraisal will be.

RAU APPRAISAL COMPANY, Inc.
Patton Bldg., Milwaukee, Wis. Monadnock Block Chicago (Branch)

"LOXALL"
A Better Hollow Block

It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address

J. E. EXNER
602 Lincoln St. Coffeyville, Kas.

With a Blow of the Hammer You Can Apply It.

It gets a double grip on your belt—bites in from both sides—and when once attached

Alligator Steel Belt Lacing

"Never Lets Go"

It is a flexible steel lacing which will give excellent service on your light and heavy drives. Its flexibility makes it especially applicable to serpentine drives and for use over idler pulleys.

It has the endorsement of thousands of plants and a record for strength and stability, built up over a long period of years, that will satisfy you.

You have the need—We have the Lacing! Let's Get Together.

FLEXIBLE STEEL LACING CO. 522 So. Clinton St. CHICAGO

STEVENSON'S PANS AND SEWER PIPE PRESSES

STEVENSON Peerless Machinery

are our leaders in a complete machinery line. Brick, tile and pipe plants furnished complete.

The Stevenson Company

Wellsville Ohio

Uniform Heat

In Kiln or Dryer is essential to uniformity of product.

BRISTOL'S

Recording Pyrometers

Record the temperatures maintained. The accumulated knowledge secured by these records enable you to secure the maximum in production and quality. Write for Bulletin 205.

The Bristol Co., Waterbury, Conn., U. S. A.

The A-B-C of Cost Saving

—

Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"

MARINETTE IRON WORKS

MARINETTE, WIS. C. J. ANDERSON, Prop.

for the manufacturing plant in this city. The company has placed $4,000 at the disposal of James Drummond, D. K. Collins, and E. N. Lynn, to be used in launching the business on a safe basis.

The California Magnesite Co. has opened a plant in Pittsburg, Cal., and general offices in the Mills building, San Francisco. The company reports that up to 1916 magnesite was produced nowhere else in the United States except California. Today British Columbia is turning out a small amount and Washington is a producer on a small scale.

All thru the West Coast country the kilns are burning and deliveries of the new season's brick have begun. In some sections of the Coast, plants were obliged to close down because the wet weather hampered operations. Some of the yards suffered from the almost continuous rains in March, and were forced to slow up, but the rainy season is practically over now and brick and clay men are launching the new season's business with vim and enthusiasm.

An order for practically two million brick for the Hercules Powder Co., on San Francisco Bay, has been divided among the various brick yards in the adjacent territory. The complete order amounts to about $20,000, and the brick is to be used for an extensive addition to the plant. The various sugar refineries in this district are also contemplating some large improvements which are to consume great quantities of brick, and the San Francisco brick men are scrambling for the orders. Factory consumption, however, according to several prominent dealers, will not come up to last year's business, as the trade is very quiet in the small towns, and in cities which are removed from manufacturing centers.

There is very little doing in the office building and apartment house line in San Francisco, Cal., business here being confined to warehouses and plant additions. "It is a safe estimate at this time", says W. W. Dennis, manager of the McNear Brick Co., "to say that brick consumption in 1918 in this section of the state will be about 25 per cent. less than last year. Coal is the main fuel. It is used by all the common brick companies in this section, and is much easier to get than last year, the prices averaging $7.35, first class Utah screenings, f. o. b. cars, San Francisco. This is quite a reduction over last year." Mr. Dennis has just returned from a trip to Los Angeles where the fire brick men are paying $1.40 a barrel for fuel oil. The brick situation in the southern part of the state seems to be very similar to that of the Bay district.

Idaho

The Anderson Brick Co., Sand Point, Idaho, has increased its capital stock to $15,000.

Illinois

The Illinois Brick Co., Chicago, has sold the American Equipment Co., of Bucyrus, Ohio, its yard on 119th St., between Stephenson and Morse avenues, about one thousand feet west of Lake Calumet, for a consideration of $118,000. The property will be remodeled for the business of the new owners.

It has been announced by W. W. Ittner, manager of the Malinite Co., of Belleville, Ill., that the offices and plant of the company will be opened for business May 1. The plant will manufacture refractories and high grade fire-brick. About 40,000 fire brick will be completed each day. Mr. Ittner is planning to carry on experiments in the laboratories of the concern with the object of discovering new fireproof materials.

Indiana

The Charles D. Glick tile factory at Grammer, Ind., which has been closed since Christmas, has resumed operations, having just completed burning the first kiln of tile.

The Baum tile factory at Sweetsers, Ind., has been closed for a few weeks while repairs are being made to the machinery. The plant will resume operations, it is announced, as soon as the necessary repairs are completed.

The Malberhe-Basile Clay Products plant at Vincennes, Ind., was destroyed by fire of unknown origin on April 6, the loss reaching $100,000. The plant had been in operation for ten years, furnishing clay products for glass manufacturing establishments all over the country.

A report from Columbus, Ind., under date of April 1, was to the effect that local stocks of jugs had been completely exhausted due to the near approach of the time when the State-wide prohibition law became effective, and the fact that the farmers of the district were laying in supplies of John Barleycorn.

Ernest I. Lewis, chairman of the Indiana public service commission, has announced that reports to the commission show a coal car efficiency at the present time of 95 per cent. and a live stock car efficiency of 100 per cent. Because of the excess of cars for moving live stock, Mr. Lewis believes the railroads will be able to use more cars for moving drain tile. The season is near when the farmers put in drain tile for the year, and the public service commission, according to Mr. Lewis, is going to do all in its power to have the tile adequately transported.

Iowa

The owners of the Shackleford Brick Co., Des Moines, Iowa, have decided not to rebuild the plant which was destroyed some months ago by fire.

The Baker Brick Co., Des Moines, Iowa, have taken downtown headquarters with the Goodwin Tile & Brick Co. in the Shops building.

The Southeastern Iowa branch of the Permanent Buildings Society will hold its regular meeting at Centerville, Iowa, April 25.

E. D. Blackman has purchased the De Soto (Iowa) Brick & Tile Co. from H. S. McCombs. Mr. Blackman was one of the original builders of the De Soto plant but later sold it.

The Morey Clay Products Co., Ottumwa, Iowa, has settled its fire adjustment with the insurance company and already has a large amount of the material on hand in preparation for rebuilding the plant.

The Atlantic (Iowa) Brick & Tile Co., has resumed operations, after several months of inactivity, M. A. Koebel being the new manager of the plant. Mr. Koebel succeeds C. E. Taylor, who is now manager of a plant at Creston, Iowa.

J. L. Buckley, manager of the Capital Clay Co., Des Moines, Iowa, has announced his retirement from that firm. Mr. Buckley has not made public his future plans. In announcing the change, the Capital Clay Co. states that the Des Moines office will be in charge of I. F. Nelson and C. W. Pulver, and J. Hayden will superintend the plant.

After having suspended operations for several months, excepting very essential work, the big plant of the Oskaloosa (Iowa) Vitrified Brick Co. has again reopened. The company anticipates a very busy season, a number of good inquiries being on hand. The new gas firing sys-

Tycos
TEMPERATURE INSTRUMENTS
Indicating Recording Controlling

Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
Electric Contact Thermometers.
Temperature, Pressure and Time Regulators.
Mercury Column Vacuum Pressure and U Gauges.
Base Metal, Rare Metal and Radiation Pyrometers.
Fery Radiation Pyrometers.
Hygrometers.
Hydrometers.
Mineral Oil Testing Instruments.
Aneroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
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Inclinometers.
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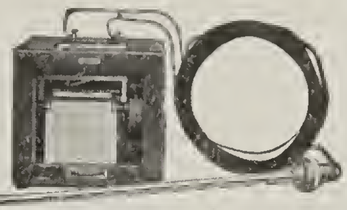
Fever Thermometers.
Urinary Glassware.
Thermometers of all kinds for home and general use.



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Tycos Pyrometers are a necessity in every industry involving the application of high temperatures.

Just write for our catalogue describing these efficient *Tycos* aids.

Taylor Instrument Companies
ROCHESTER, N. Y. 67

Coal Costs Lowered 10%

GUARANTEED

—if you will install under your boilers

Cyclone Boiler Grates

we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

Cyclone Grate Bar Company
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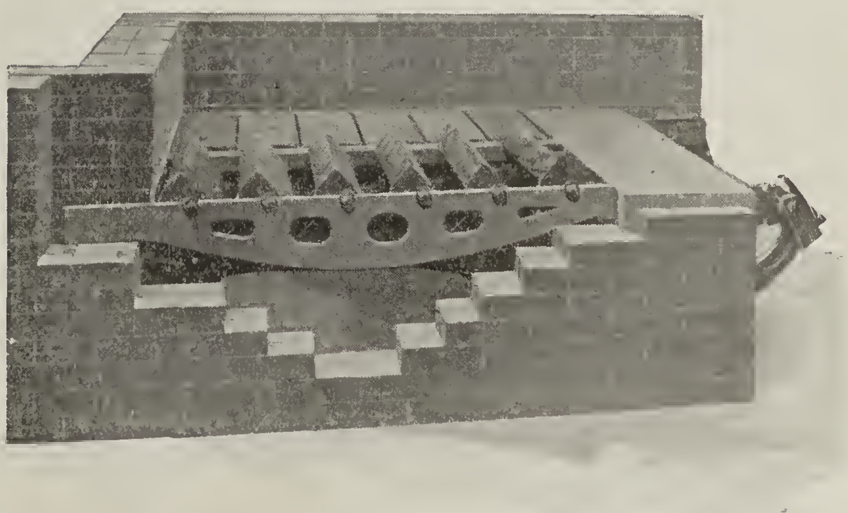

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MEANS A
Better Product

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THE STANDARD DRIER
With the Flexible Heating System

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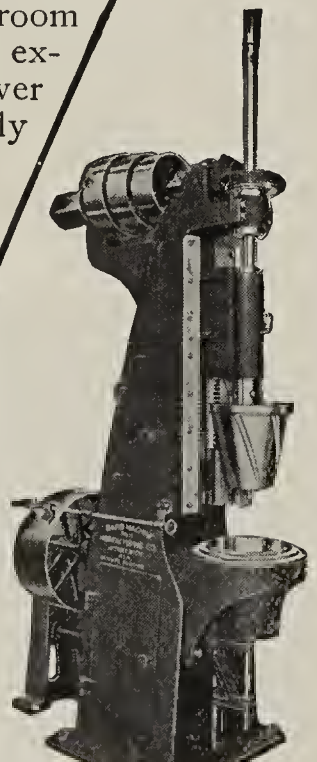
that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



tem and other new machinery that has been installed is giving the best of satisfaction and Manager Chilcote plans to make an enviable record this year in the turning out of high grade vitrified paving brick.

In spite of the general lethargy which is prevalent in the trade, there is an unusual interest being taken by Iowa clay products men in the work of the Permanent Buildings Society. Within the last few weeks fourteen new members have been added. The society is planning an active advertising campaign for the fall to emphasize farm construction.

The Permanent Buildings Society held its April meeting at the Kirkwood Hotel in Des Moines, Iowa, April 10. The meeting was entirely informal and discussions were largely on the unusual problems which now confront the trade. One result of the meeting will be that the Des Moines office of the Society will be furnished regular reports by all members of the stocks on hand. Members of the Society feel that this method will do considerable to eliminate the overproduction condition which just now is an important question. It is also thought by knowing just what stocks are on hand in the other plants, the producers will be able to give better service.

Kentucky

E. E. Campbell, of Arlington, Ky., has purchased the brick and general building supply business of H. T. Davis, and plans to add several lines of building materials. The business will be continued in the old quarters.

Harry C. Cramer, brick manufacturer of Lexington, Ky., reports that his local business this season has not been very heavy, but that he has been handling an excellent run of orders for shipment into nearby rural districts, where activity has been considerably greater than it was last season.

The Old Hickory Clay & Talc Co., of Paducah, Ky., has been incorporated for the purpose of selling clay, oil and mineral properties and developing such properties in Western Kentucky. The incorporators are C. E. Jennings, N. R. Farris, R. N. Scott and S. T. Howard. The company is capitalized at $25,000, divided into 250 shares.

The Richards Clay Mining Co., of Grayson, Ky., capital $7,500, has been incorporated by J. W. Minor, of Ensley, Ala., C. T. Thomason, Birmingham, Ala., and J. B. Richards, of Soldier, Ky. The main office of the company will be at Soldier, Ky., where the company has about 200 acres of clay land. Mr. Richards has been named general manager and will have charge of the operations. It is planned to supply clay to consumers in the district, as well as ship it into various markets.

The annual meeting of the board of directors of the Coral Ridge Clay Products Co., of Louisville, Ky., was held on April 10. The old officers and directors were re-elected, there being no changes made in management, or in the general plans of the company. The war situation and outlook for business was discussed at some length. The outlook for the company during the present year is considered very favorable, business having been excellent during the past year.

With a steady demand for hollow tile, building brick and other clay products from the government in connection with work at the Quartermaster's Depot, at Jeffersonville, Ind., the Coral Ridge Clay Products Co., of Louisville, Ky., has been kept going at a good pace, according to Manager James T. Howington, who states that there has been no let-up in demand for some time past. The

car supply situation has been somewhat easier, and the company has had no trouble in getting labor.

Due to a general shortage of labor at the mines, there has been some shortage of coal thruout the Kentucky district, due also in part to cold weather during the first half of April, which increased consumption. Prices have been reduced slightly, and such concerns as have stocking capacity are endeavoring to lay in supplies in advance, as it is practically impossible to obtain contracts. According to leading coal operators, indications are that the fuel supply situation next winter will be much worse than it was during the past season.

Altho wood block paving has made considerable headway as a paving material within the past few years, considerable interest has been shown in Louisville, Ky., in connection with recent letting of contracts for a quantity of street work, in which vitrified brick was the unchallenged leader as a paving material. At the present time the manufacturers of wood block paving are concentrating to some extent on wood block interior paving for factories and large plants, where such paving is claimed to be much better than concrete or other materials.

A. J. Jungerman, president of the old Hydraulic Brick Co., of Louisville, Ky., which quit about five years ago, reports that the affairs of the old company were finally settled up this spring. This concern at one time operated four brick plants in Louisville, and handled a large percentage of the common brick used in the district. The stockholders lost considerable money during the last few years of operation, but pulled thru without assessment. The company sold some of its old plants intact, while others have been cut up into building lots, after being dismantled.

Maine

Plans are being made for the early reopening of the plant of the Saco (Maine) Brick Co. The yard was closed the greater part of last summer because of a strike, but every effort is being made to obtain help for the coming season and the management hopes to operate at capacity. There is a big demand for brick in this state and the company anticipates little trouble in disposing of all that can be turned out.

Massachusetts

Mrs. Catherine Trask and her daughter, Miss Ethel, of Danvers, Mass., are among the few women in the country engaged in the brick manufacturing business. They conduct a brick yard at Danversport which has for many years been one of the most successful establishments of its kind in that vicinity. The business was established nearly forty years ago by Miss Ethel's grandfather and on his death the son took it up. He died in 1906 and since that time the wife and daughter have continued it. "It may be unusual for women to run a brick yard," said Miss Ethel Trask, recently, "but there is no reason why they cannot do that as well as anything else. It takes a little thought and some hard work to do anything successfully and the same method applied to this business has helped us in the past few years."

Michigan

The Standard Builders' Supply Co., Grand Rapids, Mich., has just passed thru an exceptionally prosperous year. "It has taken more effort to bring our contracts to a successful conclusion," said Mr. Battjes, manager of

On A Recent Saturday Morning

........the Clayworkers' Equipment Co. of Cleveland, Ohio, ordered from us 200 ft. of chain and several Union Standard Cast Iron Sprockets................On the following Monday morning at 11:00 A. M. the goods were delivered at their factory. You will understand that the sprockets had to be cast, bored, keyseated, and set-screwed—and the entire order transported.

This Prompt Service is an **additional** "Goodness" that you get when you buy Union Steel Chains from

The Union Chain & Mfg. Co.
Seville, Ohio

A Patriotic Necessity That Is Profitable To You

When you install Beighlee's Pyrometer, you are serving the nation by conserving the coal or fuel supply. In addition you profit yourself by virtue of the smaller amount of fuel needed, and by virtue of the greater quantity of better ware produced. Beighlee Pyrometers do not get out of order easily, they are sturdy yet very accurate—and they always save for their owners.

The Beighlee Electric Co., Cleveland, O.

the company, "but aside from various peculiar problems, due to present commercial conditions, business has been very good. We are planning for an excellent year in 1918, although we know it will take some very hard work." The supplying of nearly one-half million Grand Ledge rug texture brick for the immense Haskelite factory is one of the satisfactory jobs recently completed by the Standard people.

Missouri

Work on the two 100 x 200 wings of the new Government Arsenal building at St. Louis, Mo., will soon be under way.

The great Bevo Mill structure in St. Louis, is now completed as far as the brickwork is concerned.

William Crumlie of Hunterville, Mo., is planning to move his brick and tile factory from Hunterville to Poplar Bluff within the next few weeks.

The labor shortage is still causing trouble among brick manufacturers in St. Louis, Mo., and while the shortage is being felt, the increase in cost has run from 50 to 100 per cent. and likewise is having an injurious effect.

The brick business in St. Louis, Mo., is a little better than it has been for months. Orders, altho not large, are coming in fast. Brick men are somewhat divided in opinion as to the prospects for the summer.

The St. Charles Pressed Brick Co., St. Louis, Mo., has discontinued business. The yards are now being dismantled and the machinery is being junked. The cause is said to be due to the fact that the company did not have access to a good grade of clay.

Not a great deal of building is going on at present in St. Louis, Mo., most of that under way being apartment houses. A few of these are very large structures and are being erected in the West End, a section becoming famous for its apartments.

New Jersey

The Church Brick Co. has been incorporated at Fieldsboro, N. J., to manufacture brick. The company is capitalized at $50,000 and the parties interested are: Thomas J. Church, John Church and Leon Carty, all of Fieldsboro.

Alpheus Krantz, manager of the Kingsland (N. J.) Brick Co. is experiencing a good demand for wire-cut brick, the product of that plant, and deliveries are being made by motor truck.

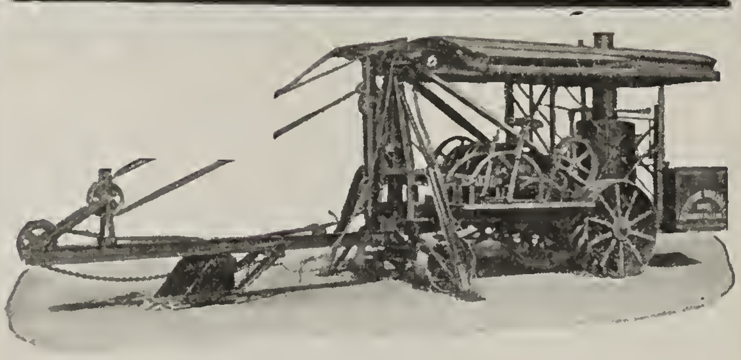
Activities in Trenton, N. J., brick yards are declining, building operations being practically at a standstill. Development in housing is badly needed but no definite steps have as yet been taken to relieve the great shortage.

The Bordentown (N. J.) Porcelain Co., has filed articles of incorporation with a capital of $50,000, to engage in the manufacture of pottery. H. L. Newell, Charles E. Burr, and Charles A. Witt, Bordentown, are the incorporators.

Plant superintendents on the Hackensack yards are somewhat doubtful as to whether or not operations will go forward this spring, it being reported that D. I. Gardner is the only plant burning any brick at the present time. Most yards are selling stock on hand without making preparations for further burns.

The housing committee of the Chamber of Commerce of Paterson, N. J., is working on plans to provide homes for the many war workers in this territory who are now being turned away because of lack of proper housing facilities.

KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
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Monadnock Block, Chicago

STEAM SHOVELS

No. 5 Drymore Truck

The loaded pallet is picked up from and deposited upon the ground or floor.

No pallet supports; no rails; no transfer cars; no turntables.

ONE MAN HANDLES YOUR OUTPUT

Perfect brick because not handled individually after leaving the Cutter or Repress.

Also used in connection with the No. 5 Drymore Dryer—an inexpensive and efficient artificial dryer for the smaller plant.

Drymore—
FOR LESS
The Drymore System Galion, O.

No help is expected from the government, but one of the factories recently built by the Chamber of Commerce is now being used for government work.

The Monmouth County Manufacturers' Association is scheduled to elect officers for the ensuing fiscal year when it meets Wednesday night, May 1. Indications are that John H. Fritzinger will again head the organization. The association chiefs report that one Monmouth clay plant closed by fuel and labor shortage is destined to remain closed because of these and other obstacles.

Considerable price cutting is being done in and around Paterson, N. J., brickyards. Hudson river commons are selling, on the car, for $11.50 a thousand while the Hackensack yards are delivering on the job for $11 per thousand. The Hudson river commons continue, however, to find a good sale, altho considerable difficulty is experienced in getting shipments thru by railroad. Hackensack brick are being delivered by motor truck and builders are thus assured of quick service.

Nathan H. Sloan of Paterson, N. J., was the speaker at the last meeting of the Kawannis Club, having for his theme "Build with Brick" and giving an interesting outline of the processes of brick and other clay products manufacture. Inasmuch as Mr. Sloan has been one of the most successful brick salesmen in this vicinity for several years, his talk was very convincing and carried conviction with it. His records of sales for the past few years furnish sufficient evidence that his methods of impressing prospective builders with the good qualities of brick as a proper material for buildings have substance to them.

At Little Ferry and Passaic, N. J., a few barges are carrying brick from the yards but it is difficult to procure tugs for the towing of these barges, since the government has requisitioned a large number of these tugs. It is expected that before long shipments can be made thru the canal, which is now being opened up. Considerable discussion is taking place on the proposition to reopen the Morris and Essex canal, from Jersey City to Philipsburg. Builders situated along this canal would be benefited by its reopening since it would insure them brick at a minimum freight cost.

The general building situation in Newark, N. J., and neighboring sections is steadily showing increased activity, and all indications point to an active spring and summer for construction work. While the dominating feature of the building and construction outlook during the coming months is the volume of government work contemplated, nevertheless it is considered that an important change toward better building conditions of a general nature is under way. Plans have been filed for a number of large manufacturing plants for war service; the Federal Shipbuilding Co., located on the Kearney meadows, will soon commence the erection of a number of additional buildings at its plant aggregating about $660,000; the American Smelting & Refining Co., at Perth Amboy will build a new two-story brick and terra cotta addition at its plant costing $75,000; building permits for a number of smaller industrial plants have been taken out, and a fair number of homes are now in course of construction.

With the fuel situation eased somewhat by warmer weather the four plants of the National Fireproofing Co., in Middlesex and Monmouth Counties, New Jersey, have resumed operations. The Keasbey plant under superintendent Victor W. Main and the Standard plant in Keasbey under superintendent W. Guy Weaver are running at about two-thirds

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand,
Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity,
Durability and Satisfaction

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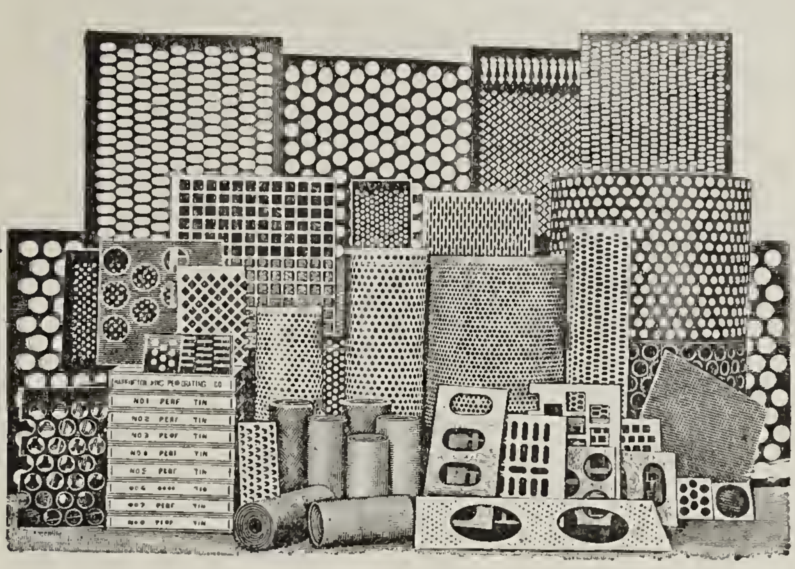

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated
Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

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We carry a complete line of high grade chemicals
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ROLLIN'S
BARIUM
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vs SCUM
and Rollin's always
Wins.

Add it to your clay at the pug mill, or the dry pan, it makes the scum producing salts insoluble and harmless to your ware.

Ask for information.

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Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave., CANTON, OHIO

Southern Representative: McBurney & Jones,
Efficency Engineers, 829 Trust Co. of Ga.
Bldg., Atlanta, Ga.

capacity. The Perth Amboy and Lorillard plants under superitendent John H. Fritzinger are running at from sixty-five to seventy-five per cent capacity. These superintendents had anticipated much more difficulty than they encountered in getting their labor back. Despite the fact that the men had found lucrative positions in some of the numerous munitions plants about Perth Amboy, they were quick to come back "for their old jobs" when the National factories reopened. However, all have not returned and it is for that reason, mainly, that the plants are not being run at full capacity. During the extreme coal shortage this winter the National concern tried shipping from its own mines in Ohio to plants about Perth Amboy. The idea worked well until zoning orders prohibited further shipments, and the eastern plants were obliged to shut down.

New Mexico

Specimens of the huge clay deposits used for making Indian pottery and brick in the vicinity of Santa Fe, N. Mex., were secured by W. P. Matchette, industrial commissioner of Santa Fe, and sent east to firms that are looking for clay to take the place of that formerly imported from Germany.

New York

The Richmond Brick Co., 50 Church Street, New York, and Green Ridge, Staten Island, has filed a voluntary petition in bankruptcy showing liabilities of $354,242 and assets of $360,575.

The Composite Sales Corporation, Rochester, N. Y., has been incorporated with a capital of $10,000 to engage in the dealing of brick, cement, and other building materials. F. H. Bettys, H. Knapp, and J. E. Maher, Rochester, are the incorporators.

Conditions have improved materially in the market for Hudson River common brick, and there has been a greater demand than for many months past. During the past week about thirty barge loads, approximating 1,200,000 brick have arrived from various points and twenty-seven of these barge-loads were distributed within the Metropolitan district. Manufacturers of brick are "watchfully waiting" before commencing active work in production, due to the high cost of materials and the difficulty in securing fuel.

Every brick and pottery manufacturer in Syracuse, N. Y., last pay day enclosed a letter in the employes' envelopes advising that if they wished to go to work on a farm this summer their positions would be open for them at the same rate of wages next fall. This action was taken at the request of the state employment bureau in an effort to relieve the farm labor shortage in this section. It was discovered that a large number of shop workers were born in the country and many of them have had actual farm experience. It is expected that several hundred men will accept the offer. Farmers around Syracuse are paying wages nearly as high as the men are receiving in the shops.

A continuous stream of seven-ton army motor trucks flowing across New York state carrying war supplies has done millions of dollars worth of damage to the state highways between New York City and Buffalo, according to state officials. These officials point out that repairs must be made immediately if the motor trucks are to be kept moving and it is the patriotic duty of New York state to see that they are not held by bad roads. The highways, the officials point out, were not built for the kind of traffic they are getting now, and have broken down under the continuous pounding. Several thousand trucks are scheduled to pass thru the state this summer. So far only the advance guard has arrived.

All preparations were made for the early starting of operations at the plant of Flagler & Allen, Poughkeepsie, N. Y., but it now appears that it will be impossible to get help, since the usual influx of men from the South has been cut off this year, owing to the fact that the colored help is obtaining more money at home than could be made by coming north this year. Last year the wages ranged from $2.75 to $3.25 a day for ordinary brickyard labor, but as there have been no applicants for positions and no responses to advertisements for help on the yards, it is not known just how much the men would demand to take up the task of making brick. But few, if any, of the yards between New York and Albany will start this spring, because of the shortage of fuel and help. The Flagler & Allen yard has a capacity of about 25,000,000 brick a year, and besides supplying the local demand, has been able to ship some brick to New York.

North Carolina

The Elk Mountain Brick Co., Legal Building, Asheville, N. C., recently incorporated with a capital of $50,000, has entirely completed its organization. The company has acquired the plant of the Grace Brick Works, and it is said that plans are under consideration for increasing the capacity of the plant. George C. Shehan is president; J. W. Wolfe, vice-president, and Guy Weaver is secretary.

Ohio

The Cleveland (Ohio) Builders Supply Co., is now representing the Atlantic Terra Cotta Co., of New York, in the Cleveland and Northern Ohio territory. J. E. Morrisey is manager of this new division, as well as of the brick department.

There is a good demand for common brick in Columbus and Central Ohio territory at the present time. Factory construction is being carried on quite actively and common brick is used extensively. Prices on commons are ranging firm.

The Lockwood (Ohio) Tile & Clay Products Co., has been incorporated with a capital of $10,000 to manufacture drain tile and other clay products. The incorporators are B. F. Wonders, Harry Hull, D. R. Gilbert, Ethel N. Miller and M. J. Sloan.

The Ohio Highway Commission will open bids April 26 for the improvement of 24 miles of roadway located in Carroll, Clermont, Fairfield, Geauga, Hancock, Lawrence, Lorain, Sandusky and Medina counties. The estimated cost of the new work is $471,000. Much of the work is to be done with paving block.

The coal supply for brick plants in Ohio is now adequate and no trouble from that source is reported. Labor scarcity, however, continues and many of the plants have curtailed their output because of a shortage of skilled labor. At the present time the output of the face brick plants is about 25 per cent. of capacity, which is considerably better than during the months of January and February.

Emmet Howard, of the Columbus (Ohio) Fire Brick Co., reports a better feeling in fire brick circles in Central Ohio territory. Factories have been able to ship a bulk

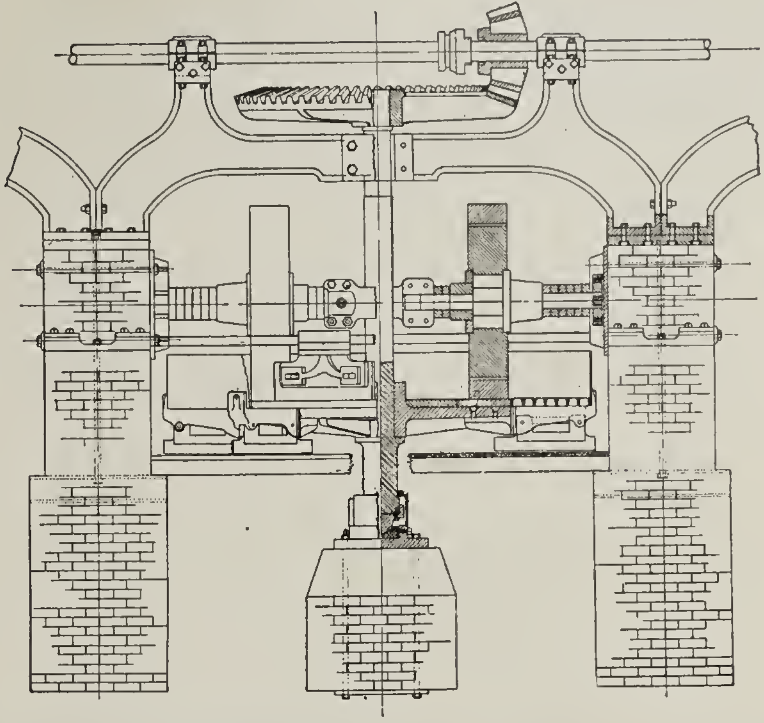
The "Means" Nine Foot Pan

Improved step and toe, and adjustable bearings.

The skill and judgment accumulated by many years of successful manufacturing show up in these pans to great advantage.

Before you buy, ask us for proof of what our machines are doing in the great Ohio valley.

Toronto Foundry & Machine Co., Inc.
Toronto, Ohio



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We recognize the fact that you know a great deal more than we do about the making of silo blocks. This is a specialty, and we are sure you are making a high quality ware.

But—the satisfaction the farmer gets from a silo depends also on the doors, roofs, chutes and the re-enforcing. That's where we come in, because we are specialists in silo hardware accessories.

We will be glad to cooperate with you in this matter of mutual importance to us.

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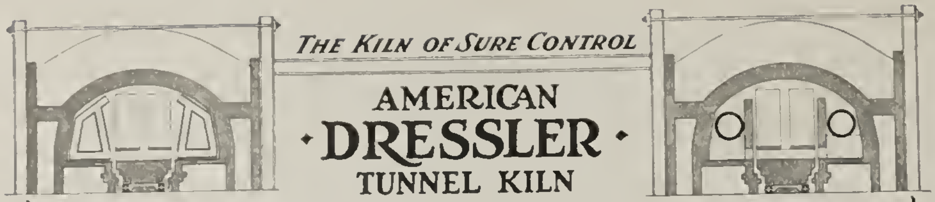

The Firing Process Explained —a reprint from the "British Clayworker"

In this kiln, the firing is by means of producer or natural gas; if the former, the producer should be placed in close proximity to the kiln, so that practically very little heat is lost. The gases are burnt in closed chambers lying alongside the track on which the goods travel through the kiln, so that these gases do not come into contact with the materials to be fired, and the heat is imparted solely by means of a circulating current of air. The air which is used for burning the gas, travels along the cooling portion of the kiln, through the hot goods, and is drawn into the chambers in exactly the right proportion required to burn the gas completely (about 100 cubic feet of air to 120 cubic feet of gas).

As there is an excess of heat in the fired goods over and above that which the air for burning is able to take up, this is drawn off by means of pipes and carried above the kiln, buried in insulating material, to a preheater, where it is used for drying.

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When you are in Cleveland stop at the newest and finest hotel in the city.

600 Rooms—600 Baths
$2.00 Up

To be complete your trip must include a visit to the Famous Rainbow Room.

Hotel Winton
C. M. SNYDER, Managing Director
Prospect Avenue at East Ninth
CLEVELAND

of their larger orders and now have some output which can be sold. Formerly the entire output, especially of the larger factories, was contracted for. Facilities for moving face brick orders are afforded by the federal government.

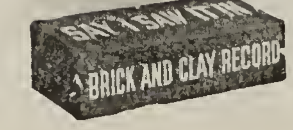
Charles Harrison, of the Gaddis-Harrison Co., Columbus, Ohio, speaking of the face brick trade said: "Things are still a little slow, but that is to be expected under the circumstances. Orders are showing more activity, however, and I believe that conditions will steadily improve. Shipping is still quite bad. We have to spend all of our energy in calling up over the long distance telephone and in telegraphing and writing in order to get any car supply at all."

The Columbus (Ohio) Face Brick Club meets regularly on Monday noons at the Virginia Hotel to discuss informally conditions surrounding the face brick trade. At the meeting April 15 the time was taken up in a discussion of the latest developments on the Western Front. Reports show that the industry in Columbus has not changed particularly from the conditions of a fortnight ago. Some inquiries are being received altho shipping facilities are still limited. No action has been taken towards selecting a successor to Emmet Howard, who dropped out of the club since he has entered the fire brick business.

Hope for a real paving project for Cleveland, Ohio, this year is seen in the trip to Washington this week of William A. Stinchcomb, county surveyor of Cuyahoga County, to confer with the committee on capital issues. Mr. Stinchcomb seeks permission for the issuing of bonds for the paving of several of the main thorofares of Cleveland and county. The trip by Mr. Stinchcomb has a double purpose. Not only is the paving absolutely needed for the benefit of the city, but the improvement of these thorofares would be of vast importance to the government, as all are being used by truck trains passing thru Cleveland to the Atlantic seaboard.

The paving brick trade in Ohio territory is somewhat quiet, according to M. M. Morrow and Charles Frank of the Hocking Valley Brick Co., and the Nelsonville Brick Co.; both companies are operated by the same syndicate with sales offices in Columbus. One of the best features of the paving block trade at this time is the improvement in shipping facilities and there is a good movement to the various jobs. Municipalities are short of funds and consequently there is little brick contracting going on. State highway work is the best prospect at this time. A letting was had at Defiance, Ohio, recently and Johnson & Rich of Napoleon were the successful bidders. The work will be brick.

How certain angles of the building material business can be developed in what is generally termed slow times, is demonstrated by the activities in the brick department of the Cleveland (Ohio) Builders Supply Co., of which department J. E. Morrisey is manager. During the first ten days of April face brick contracts were closed for the Owen Tire & Rubber Co.'s plant at Bedford, Ohio, which include 250,000 face brick; the Market House at Elyria, Ohio, for 100,000 interior brick, and the Cleveland Electric Illuminating Co., 150,000 interior face brick for a switchboard. The department also has been awarded the contract for the Atlantic terra cotta for the Marshall Restaurant building on Superior avenue near Public Square. These and other jobs total about three-quarters of a million face brick.



The Ironclay Brick Co., of Columbus, Ohio, reports considerable activity in the face brick trade, despite the unfavorable war conditions. The company has just completed shipments of face brick for two school buildings at West Jefferson and one each at Buckwalter and Yatesville, Ohio. The shipping of face brick for the large school building at Dublin will be completed in the near future. This shipment consists of 70,000 of the best quality of Ironclay brick. Orders for 70,000 face brick for a school near Van Wert and 60,000 interior and exterior face brick for a school at Eden near Nevada are also going forward. The company has just completed the shipment of 80,000 glazed brick for the State Institution for the Feeble Minded at Orient, Ohio. Other orders secured by the company recently are for 45,000 face brick for the Perry Township schools near Columbus and 107,000 for the Basil schools. William P. West, Jr., salesman for the company reports a slight improvement in local business, especially in residence work.

Pennsylvania

The Sidley Silica Sand Co., Philadelphia, Pa., has filed notice with the Public Service Commission of an increase in its capital stock from $20,000 to $40,000, to provide for expansion.

The Adson Brick Co., Philadelphia, Pa., has been incorporated to manufacture building materials, with a capital of $25,000. The incorporators are: F. P. Hudson and J. R. Buckland, of Philadelphia, and S. Charles Adams, of Mountainview, N. J.

Washington

The Puget Sound Brick & Tile Co., has been incorporated with a capital stock of $6,000 at Seattle, Wash., by Arthur and F. T. Houlahan, R. Poynter and J. B. Campbell.

The City Council of Seattle, Wash., has ordered the improvement of Broad street, from Elliott avenue to Railroad avenue, by brick paving and sewer construction work. Bonds have been issued to pay for the work.

Wyoming

Wm. Laville of Billings, Mont. is planning to move his brick plant from that point to Riverton, Wyo. and has promised the Riverton Commercial Club a modern and up-to-date brick yard with a guarantee of 50,000 brick as soon as they can be manufactured.

The Casper Brick & Tile Co., a Wyoming corporation, is building one of the most complete brick works in that part of the country, in North Casper, and from all indications, the plant will be in operation and begin shipments about April 25. This new brick and tile plant was organized by Casper business men and all stock is owned by Casper residents. The company will manufacture all kinds of building brick tile, flue lining and radial hollow blocks. The officers of the concern are: H. L. Welton, president; Geo. J. Wagner, vice-president; Peter Holden, treasurer; M. F. Goss, secretary; S. E. Bailey, assistant manager.

* * *

The Sun Brick Co., Toronto, Ont., Canada, is being operated by the bond holders. G. A. German is manager.

The production of brick in the province of Quebec (Canada) in 1917 amounted to 55,699,000, valued at $503,688. Tile, sewer pipe and pottery were valued at $266,995.

No

it is not
a puzzle about
the long life
of

Watt Cars

it is
due simply and
solely to
the care that
is taken by a

Specialist Factory

You know,
we do not
make anything
but

Watt Cars

and we take
particular care and
pride in
having easy
rolling sturdy bearings under a solidly
constructed car.
They stand the bumps
and last a long
time which also is
just what you want,
so here is our
address again.

The Watt Mining Car Wheel Co.,

Barnesville
Ohio, U. S. A.

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

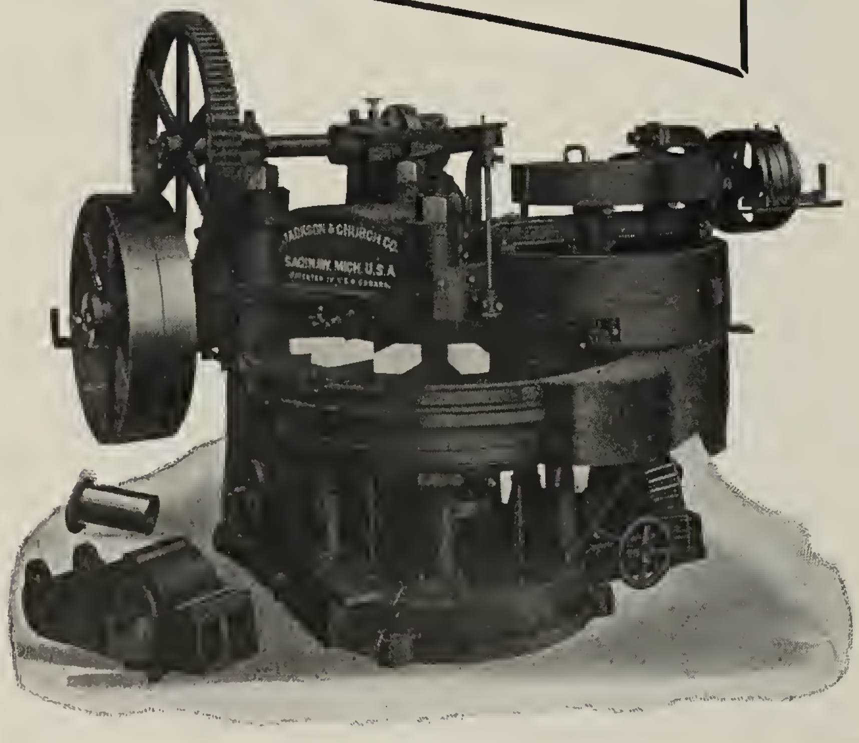
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

SAY "I SAW IT IN BRICK AND CLAY RECORD"

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

MILLION DOLLAR CONTRACT FOR POTTERS

Contracts aggregating $1,250,000 have been closed between the United States government and the American Association of Manufacturers of Vitrified China, of which B. E. Salisbury, of Syracuse, N. Y., is president.

As a result of the contract and subsequent ones which will be closed in the near future, the government will take more than one-half of the china manufactured in the United States during the coming year.

Some time ago President Wilson asked the various manufacturers of the country to band together in an organization so as to best handle the work of the government in getting its supplies during the war. In conjunction with nine other plants engaged in the manufacture of pottery, the Onondaga Pottery Co., of Syracuse, formed an organization and Mr. Salisbury was elected president.

Representatives of the organization and government experts have been at work for some weeks. The government wants the china for use in the various army cantonments, shipyards and naval bases in this country, as well as on the war ships.

The present contract will be divided up among the companies forming the organization on a pro-kiln basis. Work in all the potteries will be rushed to get the order filled in time.

⁂

AMONG THE POTTERIES HERE AND THERE

The West Virginia Potteries Co., Huntington, W. Va., manufacturers of high tension electric porcelain supplies and other clay products, has filed a voluntary petition in bankruptcy in the United States District Court of West Virginia. The total liabilities of the company have been listed at $18,589 and the assets at $70,863.

James Shaw, formerly secretary of the Cannonsburg (Pa.) Pottery Co., has resigned to form a new company which will operate at Trenton, N. J., under the name of the Shaw China Co. The company, of which Mr. Shaw will be president, has taken over the plant formerly occupied by the Morris China Co. and is planning for early operation.

The United States Government has placed a number of large contracts for domestic pottery with several manufacturers at Trenton, N. J., and the various plants are rushed to capacity. The pottery is for use at the various camps, and the ware is being rushed thru under a priority order.

⁂

Meeting of Kentucky Association

The annual convention of the Kentucky Clay Products Association, scheduled to meet in Louisville at the Tyler Hotel on April 11, was later arranged for April 12 to 13, in order that those attending might have an opportunity to visit the soldiers at Camp Taylor, over Sunday.

However, as Saturday is a bad day for a brick manufacturer, and a day upon which he is busy with his payroll, etc., several of the men who came to Louisville for the convention returned Friday night, and Saturday found only a few men present, there being no regular sessions, and only a few open discussions around hotel lobbies.

The principal action taken at the convention came on Friday afternoon, when it was decided to divide the state into three divisions or groups, each of which will endeavor to get all of the brick men of its district enlisted. It is also planned that monthly meetings be held by each group. Secretary J. Crow Taylor will see to the organization of the group bodies, which are expected to get down to intensive work during the next few months. The three sections are as follows: Eastern, with Lexington as headquarters; Central, with headquarters at Louisville, and Western, with Henderson for headquarters. The sectional chairmen are: Lexington, H. C. Cramer; Louisville, Isaac F. Tyler; Henderson, F. C. Klutey.

It is believed that thru these groups interest in organization work will be increased considerably, and that the sectional groups will greatly strengthen the state organization. Following the organization of the state association, the Louisville association was organized during the past year, and this local body did a great deal of excellent work in Louisville. As the one group is already partly organized, the greatest volume of organization work will be in the Eastern and Western sections of the state.

One of the most interesting topics taken up during the business meeting was in connection with credits, which have been standardized thru the efforts of the Louisville manufacturers and jobbers, who for some time past have been selling brick on a basis of five per cent. fifteen days; net thirty days. In some sections of the state brick are being sold on a twenty-five cents a thousand discount basis for cash within ten days. The five per cent. fifteen days has proven an excellent system according to the local trade, and it is planned to have such terms made standard thruout the district if possible.

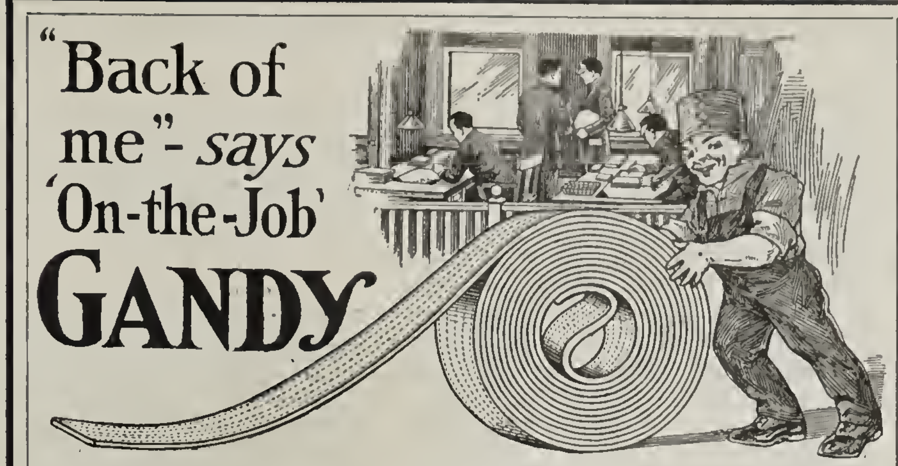
The best crowd of the convention was present at a luncheon held at the Tyler Hotel, on Friday, April 12, when a goodly number from local houses was present. At this dinner a good deal of shop talk was heard, including discussion of the transportation, labor, coal and other important questions. It was generally conceded by brick jobbers and manufacturers that local business had not been especially active in any of the larger cities of the state, but there has been an excellent shipping demand from the rural districts, which have been consuming most of the material produced, with the exception of small local lots, and such material as sold for Government purposes.

No change was made in officers or directors, the board being re-elected as follows: President, Harry C. Cramer, Lexington; first vice-president, F. C. Klutey, Henderson; second vice-president, Isaac Tyler, Louisville; treasurer, J. T. Howington, Louisville; secretary, J. Crow Taylor, Louisville. Directors: F. C. Klutey, Henderson; M. J. Bannon, Louisville; H. C. Cramer, Lexington; H. T. Miles, Maysville; A. P. Hillenbrand, Louisville; A. T. Kleymeyer, West Point; W. H. Hall, Maysville; Isaac Tyler, Louisville; G. R. Ermann, Louisville.

* * *

El Paso's Brickmaking Plants

During the last few years El Paso, Tex., has become the brickmaking center of the Southwest. Besides supplying the


"Back of me"- says 'On-the-Job' GANDY

"is a service department whose business is to serve you!"

Here *Gandy* engineers accurately fit *Gandy*, the original stitched cotton duck belting, to the user's requirements.

You send in the particulars—

—the size of driver and driven pulleys; length; horse power; conditions surrounding use, etc.,

—and *Gandy* engineers will select for you the width and ply belts which will give unvarying satisfaction.

Don't hesitate to put your transmission problems up to the *Gandy* Service Department.

No charge is made for service rendered.

Address inquiries to

Service Department

The Gandy Belting Co.

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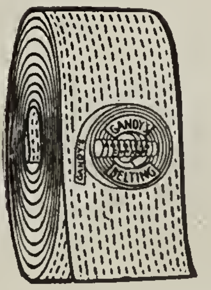
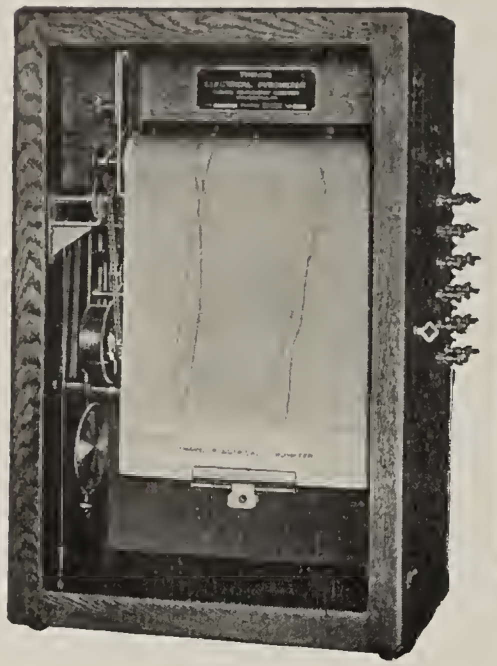
Baltimore, Md., U. S. A.

New York Branch: 36 Warren St.



Gandy Power and Conveyor Belts carry the well known *Gandy* trademark. Look for the "Green Edge".

Samples and price list on request.



Multiple Record Type

Indicator Type
With Selective Switch

Are Thwing Pyrometers a real necessity?

There is only one answer in a brick or ceramic plant, and the O. Zimbal Brick Co., of Sheboygan, Wis. has so aptly elaborated on this that we quote their letter verbatim:

> "We have never installed an appliance that has given us more satisfaction and as little trouble as the Thwing Pyrometers.
>
> "We have been using them about four or five years on our down-draft brick and tile kilns, on which we get 2,300 degrees of heat and have up to the present time not been obliged to renew our thermo-couples.
>
> "We find that the men prefer firing with the instrument rather than watching the heat in the kiln, and we ourselves have a perfect record at all times. This eliminates all guess work and we are able to turn out our kilns in less time and with less fuel.
>
> "We are of the opinion that no firm that has used Thwing instruments would go back to the old system."

We are prepared to submit convincing data as to profitableness, design a system specially for your conditions if necessary, offer helpful suggestions for installation, and will guarantee performances beyond question, if you will tell us your needs. Ask at least for our book on pyrometers in brick and ceramic plants.

18

THWING INSTRUMENT CO.
3336 Lancaster Avenue Philadelphia

building trade within a territory of 500 miles from the city in Texas, New Mexico and Arizona, there will be a demand for enormous quantities of the material from points in Mexico as soon as conditions in that country become more settled, according to the expectation of local manufacturers.

The largest and most modern brick plant in the city is that operated by the International Brick Co. This plant, together with its shale deposit in New Mexico, represents an investment of $300,000, and is owned by the International Brick Layers, Masons and Plasters' Union of America. The union men a few years ago conceived the idea of investing their surplus money in a brick plant and El Paso was selected as a suitable location.

Work on the plant was started in 1914 and completed in 1915, the first brick being delivered by the new company on August 10, 1915. Since that time the plant has been running to full capacity. In the buildings and kiln of this plant there was a total of five and a half million brick laid. It is one of the largest plants of the kind in the Southwest. The daily output amounts to 400 tons of clay products—brick, hollow tile, and drain tile. The company plans to begin the manufacture of sewer pipe in the near future. J. F. Driscoll is superintendent of the plant.

The plant of the El Paso Brick Co. is located in New Mexico, just across the Rio Grande and about five miles above the city. This plant is located near the shale deposits. One hundred and twenty-five men are employed at this plant at an average monthly wage of $5,000. The average monthly output is 168,000 brick.

The Atlas Brick Co. is located at 400 Dallas Street. This concern represents an investment of $85,000, employs 30 men and has a payroll of $1,800 per month. The average monthly output of the plant is 55,000 brick.

Practically all of the business buildings and residences in El Paso are of brick construction and the use of burned clay building materials is becoming general thruout the Southwest.

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Letters from the Balkan Front

Thru the courtesy of James S. Nicholson, president of the Nicholson Clay Manufacturing Co., Chicago, Ill., we are in a position to give to our readers two extremely interesting letters, received by Mr. Nicholson from Scott Russell, a former employe of the Nicholson company.

Mr. Russell left the company a little over a year ago, served six months with the American Ambulance in France, reenlisted, and is now with the Ambulance Section on the Balkan Front. When the United States entered the war, Mr. Russell tried to enlist with our forces, but was rejected on account of some minor physical defect. Mr. Russell was recently presented with the French Cross for bravery.

The first letter is dated Serbia, August 10, 1917, and follows:

Dear Mr. Nicholson: Never expected to set foot in this country, but it seems that I am destined to see the part of the world the balance of our family failed to see.

I cannot hand the country much for scenery, but the people and customs are certainly interesting. This country being Turkish before the Balkan War, the majority of the population are Turks. Not a step toward civilization has been taken in hundreds of years. Ox teams still do the hauling and the conveyances are the old type constructed of crude timbers with solid wooden wheels. The only roads in existence have been built recently by the French.

The most noticeable of the inhabitants are the Turkish women, garbed in black and wearing veils; the Turks with their red fez, slack-seated trousers and slippers with red pompoms and the Bulgarian women in gypsy attire and wearing wooden sandals.

The only progress made that I have seen is in architecture. A large city near which we are located, contains some very respectable buildings of neat and solid construction. Seen from a distance, it is a wonderful sight. It nestles between a couple of hills and in the sunlight fairly scintillates. Towering above the buildings are the white needlelike towers of the mosques.

This country can be likened in some respects to Montana. It is extremely hot and dry, water is scarce, few trees exist and brush is scarce. The hill slopes are covered with rocks and a dry coarse grass. The sun beats down with a vengeance during the day, but when it disappears behind a peak in the evening, we seek our coats and sweaters. Sun helmets are furnished us and during the heat of the day no one labors.

I am living in a dugout at the present time, located on a hill slope on the edge of a broad valley. From my veranda I can see on the right, snow-covered peaks, on my left, the valley and across the valley the mountains that harbor the struggling forces. Owing to the mountains, the fighting differs in many respects from that on the French front. Hand to hand fighting is resorted to more, there being little artillery used. Trenches are practically impossible, the men sheltering behind rocks. Planes are used a great deal for both observation purposes and bombing parties. Gas bombs are used a great deal, making it the height of folly to leave camp without a mask.

Our posts are located very near the front, but we only go up during the night and with extreme caution. Horns cannot be sounded as they would invite a fusillade from an enemy machine gun.

On the whole, I am enjoying my experiences immensely.

The second letter from Serbia is dated August 26, 1917, and gives an interesting and detail description of the fireproof construction of many of the buildings in the Serbian town in which Mr. Russell is located, which was Turkish before the first Balkan War and which buildings were presumably constructed since the Turkish evacuation. The letter reads:

Dear Mr. Nicholson: As you are in both ends of the fireproofing game, I hope the following will be of interest to you and not bore you.

Being interested in construction in general and fireproof construction in particular, I made a few observations in a town bombarded and set on fire the other day by the Bulgars.

While roaming around, inhaling decomposing flesh and taking pictures, I naturally kept an eye open for anything odd in the construction line. Being in a country hundreds of years behind the times, in many respects, imagine my surprise to find in many of the buildings what might be termed flat hollow tile floor arches. These arches are not constructed of clay tile, but of hollow brick, laid flat between six-inch I's about three feet o. c. with a filler of the same material on top. These brick, of the type in common use in the States, spring off the lower flange of the beam and are held in place by the mortar joint only, no key being used. The most surprising part of all is that these arches stood up wonderfully under extraordinary conditions. Many were damaged by falling walls and others by direct shell hits and in some cases the heat warped the beams owing to the bottom flange being exposed, but I venture to say 50 per cent. withstood shell, fire and falling wall.

In France few lath and plaster partitions are used, even in the most humble dwellings, they being of tile or brick. In this country practically all are of brick and they too hold up very much in this particular town.

All construction is wall bearing, lally columns and girders being used where interior span is too great. Exterior spandrels are double I's.

I was in the town during the bombardment and the heat was terriffic blocks away, yet in very few instances

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

Coal Supply?

You will have difficulty in securing the coal necessary to the operation of your plant next spring.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 7c a week ($4.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

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CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

did the fire spread from one building to another. Each building had to be fired independently by the combination of high explosive and shells. The result was that the fire confined itself to the bombarded portion of the town regardless of the intervening narrow streets.

Yes, European cities excel over American cities in fire resisting qualities. Thick exterior walls of stone or stuccoed brick and red tile roofs play the largest part as conflagration preventatives. Sturdy constructed floors and fireproof partitions assist. Like a fire in a fireproof office building confining itself to the suite, so will a residence fire in this country confine itself to the residence.

The town I speak of, now Serbian, was Turkish before the first Balkan War and as I believe more of the buildings have been constructed since the Turkish evacuation, I remove my hat to the Turks and their fireproof construction.

* * *

After the War, Which—Burned Clay or Cement?

Discussing what brick men can do to help them in their business, William C. Alden, a structural engineer, and a strong friend to brick stated recently: "The time to educate people for building is now. Regulations of one sort or another have reduced building and other structural work to actual war necessities, or so nearly so that conditions warrant the belief that building will almost wholly cease during the remainder of the war. But manufacturers of brick and other burned clay products should not allow this time to pass idly. They can profitably utilize it for educational purposes. How is for them to say, but the principal feature to remember is that the people who are to build must be made to know brick and other forms of burned clay definitely, else they will never quite realize its value as a structural material.

"Brick has made great strides during the past few years, but it has been distanced by cement, not because cement is better, but because the publicity work of cement's advertising men has been more effective. The average person selects his building material much as he does his clothes, because a certain brand or color is well advertised and he becomes acquainted with it. In other words, if the publicity men of the brick trade will do their work as effectively as the publicity men of the clothing trade, or some other trade, for example, they will insure much larger use of brick in all sorts of building and particularly in dwellings.

"Another influence has worked against brick in the past, tho it is passing away now and the situation is much improved. The old type of brick house was merely a square box, of a greater or less number of stories with no claim to architectural beauty. Or it was just the reverse and was so ornate that it became grotesque. Seeing these houses, and they are still quite as good as when erected because they are of brick, frightens individuals who might otherwise choose burned clay. They haven't progressed far enough to understand that brick can be made architecturally as beautiful as wood, as substantial as stone and much better than cement. Yet the cement man has benefited because he has new and artistic designs to use in his construction. Cement is so new that no monstrosities of half a century ago are left to scare the interested person away.

"What is required during this season of enforced idleness is liberal and effective publicity which will prove to possible purchasers what can be done and then do it so well that they will be convinced. The present restrictions will not last forever. Sometime this has to end and as soon as restrictions are removed the rebound will be astonishing and structural work will begin in such volume that brick manufacturers will be swamped with orders, provided they do their publicity work as they should. Much depends upon that. And if I were to leave a message with brick men today that would in my judgment be most helpful, it would be to begin immediately upon a publicity campaign which will convince potential builders of the utility of burned clay. Apply it to all forms, for fireproofing and terra cotta are as important as brick, and their use should be encouraged quite the same as the use of brick. The time to begin work is now and it should be kept up until the accomplishment is sufficient to insure universal use of brick and burned clay as a building material."

* * *

Maryland Company Constructs Clubhouse

From time to time, *Brick and Clay Record* has published items covering the constructional progress of the Maryland Clay Products Co., of Lonaconing, Md., a subsidiary of the Maryland Coal Co.

This company's plant has now been in operation for some time manufacturing a great variety of products. The one million dollar outlay required for the construction of the new enterprise was not, however, expended entirely in the erection of the plant itself. A handsome office building has been erected and there is now in the course of construction a beautiful and well equipped club house, for the use of the company's employes.

The Maryland company operates in addition to its clay products plant, extensive coal mines and the new club house will be so situated as to be easily accessible to employes of both plant and mines. It will contain a library, billiard room, swimming pool and various other recreational features. According to present plans, there will be a number of sleeping rooms included in the structure.

Another interesting item concerning the progress of the Maryland Clay Products Co. is the manner in which it obtained power used for its machinery. More electric power was needed by the plant and mines than could be obtained in Lonaconing so a contract was made with the Edison Co., of Cumberland, twenty-four miles away to furnish the electric power. A very high voltage line was brought from Cumberland over some of the most precipitous and deepest canyons in Maryland to Lonaconing where the electric current was distributed to the plants and the mines.

A large continuous kiln is used in burning the company's products. The plant is under the supervision of Louis Runk, chief consulting engineer, and I. B. Stevens, general manager. Great credit is due to both of these men for their aggressiveness in overcoming stubborn obstacles and the manner in which they have started the plant on the road to success.

* * *

Cleveland Seeks Government Aid

The first definite step toward obtaining funds from the government, to be used to reduce the housing shortage in Cleveland, Ohio, was taken by the appointment of a permanent secretary of the Cleveland Real Estate and Housing Co. L. A. Moses, well known in housing interests circles, was

Erie Revolving Shovels

Digging a very hard shale at the Greer-Beatty Clay Company's plant, Magnolia, Ohio.

"Stronger; more reliable; wider range; speedier!"

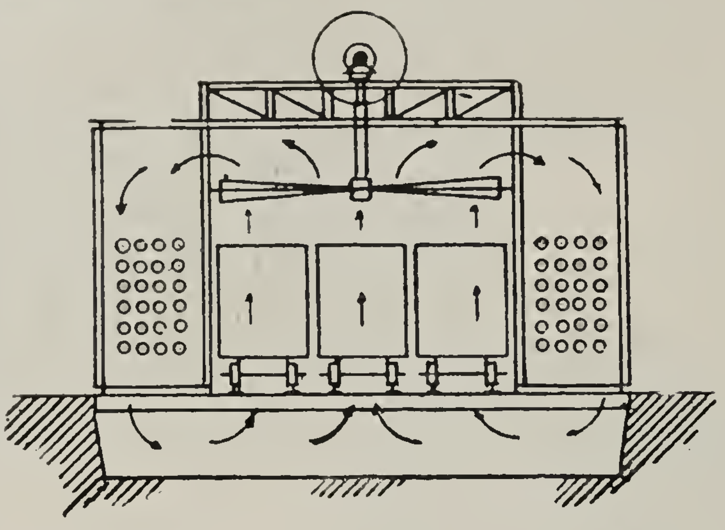
"The Erie is the best shovel on the market today. We have operated two other makes of shovels, but the Erie is stronger built, more reliable, has a greater range of action, and is much speedier than any other machine of its size. We have averaged 635 cu. yds. of hard shale per day of 9 hours."—*The Cable Co., Canton, Ohio, owners of FIVE Eries.* Excavating a very hard shale at the plant of the Greer-Beatty Clay Co., Magnolia, Ohio.

635 cu. yds. is a fine daily average—perhaps better than you could get in your pit. But you surely will be pleased with the Erie's speed! This 20-ton shovel does work which would otherwise require a larger and far more costly machine.

Best of all, the Erie is RELIABLE, being built far stronger than the usual standard of steam shovel construction. More strength at every point of wear and strain.

Prove these facts for yourself. Find out which is the best revolving shovel on the market. Write for a copy of our new Bulletin "B".

Ball Engine Co., Erie, Pa.



"Proctor" DRYERS

Best For

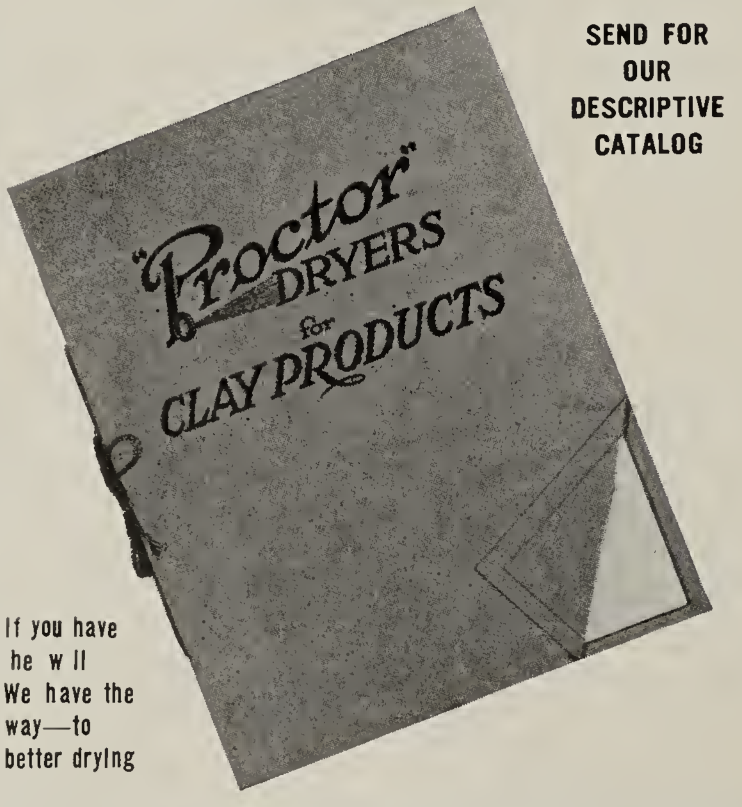
White Ware and Refractory Plants

In potteries, electric porcelain plants, and in all factories of a similar high grade; in fire brick and in other refractory shape plants, the Proctor Dryer is the supreme dryer.

It is built like a machine; it is perfectly controlled, the ware is dried speedily, surely and with almost no loss. It may fit your plant conditions exactly. Better find out from

The Philadelphia Textile Machinery Co.
SIXTH STREET AND TABOR ROAD
Philadelphia, Pa.

SEND FOR OUR DESCRIPTIVE CATALOG



If you have
he w ll
We have the
way—to
better drying

selected for the post. Mr. Moses also will be treasurer and general manager of this organization.

He has left for Washington, to place before the proper authorities the facts regarding the extreme housing shortage in Cleveland. The figures Mr. Moses has taken with him were obtained in a recent survey, showing that Cleveland is short 10,000 homes.

The formation of the real estate and housing company was made possible thru the activities of the Cleveland Chamber of Commerce. Paul L. Feiss is president and Myron T. Herrick chairman of the board of directors. Capitalization is $10,000, all subscribed, but which will be increased to an amount depending upon the total subscribed by the government, says Mr. Moses. The amount to be asked for will be of sufficient proportions to care for the needs of the city. The money is being sought from committees at the capital handling a total of $100,000,000 appropriations for houses for ship builders, and houses for munition plant workers.

⁂

The tile factories of Western Ontario (Canada) which are using natural gas as fuel will have until July 1 to change their equipment to permit the use of other fuel. As the larger percentage of drain tile manufacturers in Ontario is made in plants using natural gas as fuel, the order of the Municipal and Railway Board will mean a considerable aggregate outlay for plant changes.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912.

of "Brick and Clay Record," published Bi-Weekly at Chicago, Ill..............................for April 1, 1918.

State of Illinois }
County of Cook } SS.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edwin G. Zorn, who, having been duly sworn according to law, deposes and says that he is the Editor of the "Brick and Clay Record," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher: Kenfield-Leach Company	Chicago, Ill.
Editor: Edwin G. Zorn	Chicago, Ill.
Managing Editor	None
General Manager: H. H. Rosenberg	Chicago, Ill.
Business Manager: David B. Gibson	Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

F. B. Cozzens	610 Federal St., Chicago, Ill.
H. H. Rosenberg	610 Federal St., Chicago, Ill.
S. J. Leach	610 Federal St., Chicago, Ill.
L. W. James	610 Federal St., Chicago, Ill.
F. J. Sauer	610 Federal St., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state)..............None

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Edwin G. Zorn,

(Signature of editor, publisher, business manager, or owner.)

Sworn to and subscribed before me this 26th day of March, 1918.

Anna M. Phillips.

My commission expires Jan. 25th, 1920.

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Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

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'I Know Where To Get It"

When the break comes, or when the supplies are needed, it is of supreme importance to have the necessary repairs on hand. If this is not feasible (and sometimes it isn't) you should at least know where to send to get exactly what you want.

In the big catalog just published by Geo. B. Carpenter Company there is listed everything under the sun that the clay-products men use for auxiliary equipment.

It is impossible to list them all here, as the catalog contains over one thousand pages, each page containing detail descriptions of equipment that varies from clam shell buckets to coal oil lamps and pocket knives.

But—it is of less importance to you to know what is listed, than to know what you can get just when you want it.

The big blue Carpenter catalog is your anchor in case of storm, your safety valve. With it in your possession you can feel a measure of safety and protection, for when the necessity arises you can take the catalog, thumb thru its pages as thru an encyclopaedia, and find exactly what you want. It is a matter then, simply of mail or telegraph to complete your part in getting the equipment to your plant.

Everything listed in the catalog—you can get and get promptly; this in spite of an amazing increase in business and in spite of increasing transportation difficulties. This is due chiefly to the tremendous stock on hand and to determination on the part of the company to speed up on service.

If you believe that the "know where to get it" is valuable to your ability to keep your plant producing, then you should send for the catalog and have it ready for reference when the emergency arises. It may be obtained by addressing Geo. B. Carpenter & Company, 440 North Wells St., Chicago, Ill.

⁂

How To Investigate and Buy a Motor Truck

By H. P. Branstetter, of
The Kissel Motor Car Co., Hartford, Wis.

"If I were in the market to purchase a motor truck, there would be several facts I would first investigate thoroly before purchasing.

"I could not afford to handicap my transportation department with trucks not adaptable to its needs. Neither could I afford to purchase trucks that were backed up by doubtful manufacturing facilities or of unknown reputation. My transportation problems could not be solved by trucks that had not demonstrated their mechanical superiority, as that would invite uncertain deliveries or delayed shipments.

PROPER SIZED TRUCKS A NECESSITY

"As a careful buyer, I would look first of all to the ability of the truck to adequately meet my requirements. I know that truck owners should apply the same rigid tests in purchasing their transportation equipment that they apply to their production equipment.

"Experience has proven that a truck, in order to be operated economically, must fit the purpose for which it is to be used. Is the truck of the right size to accommodate the style of body I need? Is it built heavy and strong enough to stand up under my loads? Will it prove adaptable to the emergencies that occasionally pop up, such as slight over-

Here's a belt
IMMUNE TO STRAIN

It is
Stanley Belting
Solid Woven Cotton

and its special construction not only gives it greater strength and flexibility than is possessed by any other belt, but, most important of all, it enables it to ride over the smallest pulleys without buckling and tearing the inner and stretching the outer surface of the belt to the breaking point.

Paper Pad Example

To illustrate belt strain take a pad of paper and, holding it firmly at the ends, bend it over an arc. The outer sheets will be stretched to the breaking point while those on the inside are forced into big humps or ridges. Large spaces develop between the "plies" on the inner half of the pad.

Now straighten it out, still holding it firmly at the ends. The action is reversed. The outside surface now buckles up in ridges, while the inside surface is drawn tight. This time the spaces develop in the outer half of the belt.

This is BELT STRAIN, and it is the greatest enemy of belt life known.

The constant strains and stresses set up in forming the pulley arc and then straightening out for the "long run" soon separate the strongest plies and tear and break the most perfect stitching. The Special Construction of

Stanley Belting
Solid Woven Cotton

has made "Stanley Belting Immune to Strain." Working on the principle of a hinge, it allows the belt to freely contract and expand under tension and pressure and then, on the straightaway, to easily and freely resume its normal condition.

This one point alone would warrant the adoption of Stanley Belting on your plant, but it has many other points of excellence which, when combined, make it the most logical belt to use for clay plant work.

STANLEY BELTING—Immune to Strain—is your belting. It has set unequaled records for continued service at low cost for others; it will for you.

Send a letter now, for information and price lists, to

Stanley Belting Corp.
32-40 So. Clinton St. Chicago, Ill.

HOW TO MAKE THE FARMER
BUY
MORE
DRAIN
TILE

You
sell to him, or to a group of his neighbors, or to a tile ditching contractor, or to yourself

A
Buckeye
Trench
Excavator

The difficulty that confronts the farmer and the drain tile manufacturer is a lack of labor with which to dig the ditches.

It is your necessity to buy for your immediate territory a Buckeye trencher, so that the labor problem will be eliminated.

Then—the farmer buys and you sell your output to capacity.

The Buckeye Traction
Ditcher Company
Findlay, Ohio

Get our Plan

loads, without getting top-heavy? Will it be easy to load and unload?

"These and other points, I would carefully investigate and make doubly sure of before going any further, because a misfit truck means not only high up-keep, but represents an investment that will prove a liability instead of an asset.

THE MANUFACTURER'S REPUTATION

"Once I was satisfied that I had found the right size and style of truck, I would then investigate the reputation of the makers.

"Who are the manufacturers? What is their record? Are they financially strong and sound? How long have they been going? What is their reputation as engineers and designers?

MAKE SURE OF THE MOTOR

"The primary object of my investing in trucks being to serve more customers or deliver and haul more goods in a shorter space of time, I would next investigate the source of power. Is the power plant equal to the power demands I would make on it?

"I would make sure of its flexibility in making the short stops and starts of traffic zones, as well as giving a steady uninterrupted flow of power on the long stretches in suburbs and country. I would test it on stiff grades and different types of roads. I would talk with other owners and get their experience of gasoline and oil consumption. As the motor is the heart of the truck, I would thoroly satisfy myself in every way that my truck would live a long life and not suffer from chronic 'heart failure.'

THE NEXT THREE TRUCK ESSENTIALS

"My investigation would next be concentrated on the next three truck essentials—axles, brakes and springs. Are the axles of the proven type as to principle of construction? Are they made of the highest quality material to stand the brunt of my loads without giving out? Are they easy to take apart when in need of overhauling?

"Do the brakes possess super-strength with which to hold the load on all grades? Are they quick to act and stay set when in action? Have they the bridge-builder's factor of safety to protect my property and the lives of my drivers?

"The springs must be heavy, but flexible, sturdy and pliant to keep the load away from the frame. I know that Chrome Vanadium and nickel steels are the most dependable, and if possible should be liberally used in all vital parts.

"I would then investigate the width and thickness of the frame to see whether it was of liberal dimensions and constructed to withstand the severe stress and strain of continuous loads. This is the foundation of the truck and the real support of the load.

"Then I would look for such details of refinement as would insure constant service. Among these might be mentioned oiling devices, which should be easily attended to, motor, transmission and axles that are accessible, so that my driver will take pleasure and pride in keeping it in best of order.

"By conducting such investigation before purchasing, I would be taking the chance out of truck buying—the uncertainty out of truck performance—the risk out of my truck investment. It would be in reality a process of elimination and would insure my getting a truck that would prove an efficient and economic asset to my business."

⁂

Brown Instrument Expands

A new addition to the factory of The Brown Instrument Company, Philadelphia, has been contracted for to cost approximately $50,000.00.

Richard P. Brown, the president, says that their plant is working full time and overtime to supply both government and domestic orders on pyrometers and heat measuring equipment.

⁂

New England Representative for the Ball Engine Co.

E. L. Sparks, lately Industrial Editor of "Engineering News-Record," has been appointed New England repre-

E. L. Sparks

sentative of the Ball Engine Co., manufacturer of Erie Revolving Shovels.

Mr. Sparks is a graduate of the Central Manual Training School of Philadelphia. His first construction experience was with the M. K. & T. R. R., in 1902, on the Oklahoma City extension. Later he joined the force of the Big Four on construction of the Hillsboro-Mitchell cut-off, after which he joined the engineering staff of the Southern Pacific Railway in 1904. He did a great deal of pioneer work for the S. P. in the Navajo Indian Reservation, New Mexico, and in the northern Yaqui River Valley, state of Sonora, Mexico, on exploration surveys of the upper Yaqui Canon.

In 1906 Mr. Sparks was appointed assistant engineer of maintenance of way on the Tucson Division, in charge of ballast work, drainage and building construction. In 1907 he joined the construction forces of the Chicago, Milwaukee & St. Paul Railway, in Montana, as resident engineer, in charge of heavy work east of Miles City, Mont.

At the close of the construction, in 1909, he rejoined the Southern Pacific, making a railroad reconnoissance of the east coast of Mexico from Matamoras to Tampico. Later he was locating engineer of a new line across the Navajo Reservation, and construction engineer for the reconstruction of the Twin Buttes Railway.

Mr. Sparks came east in 1914 and joined the staff of "Engineering Record" as a writer of advertising for construction equipment. He remained with the paper after its consolidation with "Engineering News," and was appointed Industrial Editor of "Engineering News-Record" in 1917, resigning that position to become New England representative of the Ball Engine Co.

This vast experience fits Mr. Sparks to be a splendid adviser for clay plants planning to equip with power shovels.

⁂

Conveyors in Place of Wheelers

The assistance of a mechanical conveyor that will carry the ware from the soft-mud machine to the open air or shed dryer is an absolute necessity if the fight against "lack of labor" is to be even partially won!

The organization of great armies to go "over there" has been a drain on our resources of men to such an extent that practically every single industry has been or will be hard hit.

A reprieve is offered for the soft mud plant, in the form of a mechanical conveying system, and Anderson's system enables the plant to work when those plants without it are tied up for lack of labor.

The system transfers the brick on pallets from the machine to the point where one or two men lift them off the conveyor on their pallets and place them in the drying racks.

There is no need for a string of men with wheelbarrows or buggies, running from machine to dryer; and in addition to this labor saving there is a gain in the simplicity of the operation and in more perfect ware being delivered to the racks.

At the other end of the game, when the ware is bone dry and hard, the same or a similar conveying system is used to carry the brick from the dryer to the kilns, and here again the usual necessity for a gang of wheelers is eliminated.

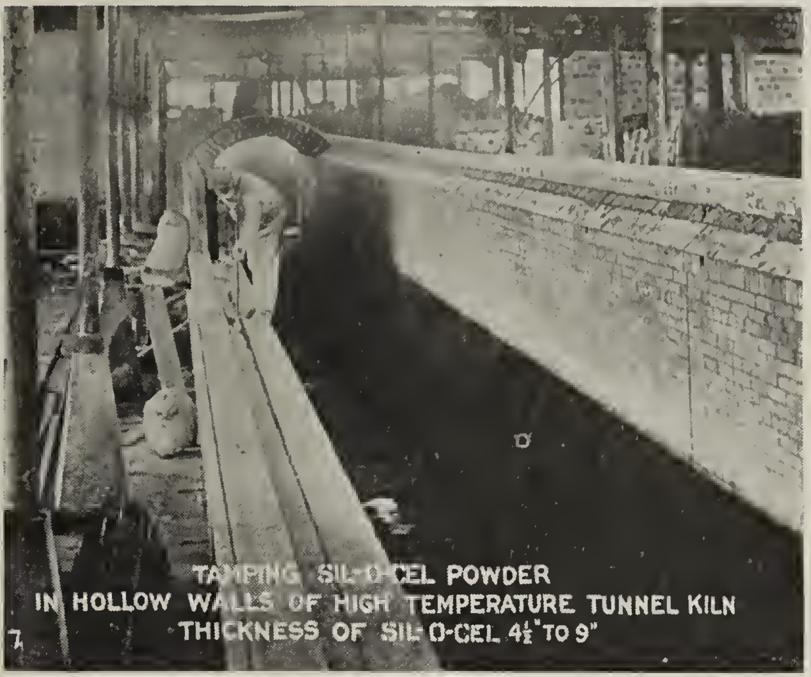
Over in the East, in New England, there are many of these systems in operation. The resultant saving in labor is enormous.

C. J. Anderson, of the Marinette Iron Works, in Marinette, Wisconsin, will be glad to send you full and complete information.

⁂

Appraisel or Inventory—Which?

Great interest has been shown in the subject of appraisals by the clay products manufacturers of Iowa as a result of a paper which was read at the last convention of the Iowa Clay Products' Association by W. F. Worcester, of the Rau Appraisal Company, Milwaukee, Wis.,


TAMPING SIL-O-CEL POWDER
IN HOLLOW WALLS OF HIGH TEMPERATURE TUNNEL KILN
THICKNESS OF SIL-O-CEL 4½" TO 9"

Insulate Your Kilns With

SIL-O-CEL
PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

SIL-O-CEL Insulation will reduce the waste due to over or underburned pieces, and will save most of the heat which is ordinarily lost by radiation.

Aside from these savings and their resulting economies, SIL-O-CEL Insulation insures:

More uniform distribution of heat throughout the kiln with the consequent elimination of over and underburned pieces.

More complete temperature control.

Protection of the outer brick work from violent temperature change and consequent cracking with its resultant air leakage.

Possibility of using thinner wall construction without excessive radiation losses.

Eliminating the necessity of over heating the hotter portions of the kiln in the endeavor to bring the cooler parts up to temperature.

SIL-O-CEL Insulation is supplied in the form of bricks, blocks, powder and cement. It is placed between the inner refractory lining and the outer wall.

Let us tell you how SIL-O-CEL will help you.

Write for full details

SIL-O-CEL Prevents Heat Penetration

CELITE PRODUCTS CO.
NEW YORK 11 Broadway
CHICAGO Monadnock Bldg.
PITTSBURGH Oliver Bldg.
LOS ANGELES Van Nuys Bldg.
SAN FRANCISCO, Monadnock Bldg.

"It Replaces Four or Five Men"

The B-G Portable Belt Conveyor

is used with success on the plant of The Plymouth Clay Products Co., Fort Dodge, Iowa. Recently they wrote the following:

"We have had this machine in use for some time. It is 15 feet long and pulled by a 2 H. P. motor. The Conveyor does excellent work, and all that they claim for it, and in our case replaces four or five men. We are using it to move clay from cars into the building and from one place in the building to another. It has proven equally good in each case.

"We consider that the machine would be excellent for moving clay, coal, sand or any material of that nature."

When writing for information, state length desired, and voltage, phase and cycle of your current

Barber-Greene Company
Aurora, Illinois

728 Brisbane Bldg., Buffalo.
472 Transportation Bldg., Chicago.
340 Leader-News Bldg., Cleveland.
327 Jefferson Ave., West., Detroit.
247-251 Pearl St., Hartford, Conn.
788 S. Evergreen Ave., Kankakee, Ill.
2918 Southwest Blvd., Kansas City.
122 W. Water St., Milwaukee, Wis.
Franklin & Channing Aves., St. Louis.
519 Andrus Bldg., Minneapolis.
Tribune Bldg., New York City.
2013 Market St., Philadelphia.
207 Fulton Bldg., Pittsburgh.

Canadian Sales Agents—Mussens, Limited, Montreal.
Outside of U. S. and Canada—Allied Construction Machinery Corporation, 120 Broadway, New York City.

on the subject of "Appraisals or Inventory—Which," and which was published in the March 12 issue of *"Brick and Clay Record."*

Few plants are in a position to know the actual replacement value of their plants—the amount that would be required to rebuild the factories should they be destroyed by fire. Inventories, it is true, tell the original value of the plant, or the amount required to build it ten or fifteen years ago; but values today are from fifty to one hundred per cent. greater than those existing at the time the plant was built, and to rebuild would require a proportionately greater expenditure.

The error of basing plant values on costs of fifteen years ago, and insuring the plant on that amount, has caused many business mishaps in the past. To know the proper amount of insurance to carry it is necessary to know the exact value of the plant based on today's prices. That is the information which an appraisal gives.

The Rau Appraisal Company, of Milwaukee, has done considerable work for clay-products plants, setting up everywhere a record for efficiency and expedition. We have in our files two letters recently received by this company from clay-products manufacturers praising the thoroness of the service which they rendered.

One is from the Shackleford Brick Company, of Des Moines, Iowa, whose plant was recently destroyed by fire. L. E. Stone, treasurer and manager of this company, states that the appraisal made by the Rau Appraisal Company proved very beneficial in the settlement of the fire insurance claims, which would not have been adjusted as readily or as satisfactorily had the company been without an appraisal.

The other letter comes from the Rockford (Iowa) Brick and Tile Company, and states that an appraisal made for them disclosed the fact that they were underinsured by at least $20,000.

The character of the work done by the Rau Appraisal Company, Patten Bldg., Milwaukee, Wis., is exceptionally high and, because of the company's extensive experience in the clay products industry, it is especially qualified to make appraisals of clay plants.

⁂

Mortar Colors

The C. K. Williams Company, of Easton, Pa., are mailing a handy booklet, descriptive of their complete line of colors for mortar and brick.

Good colors are hard to get, and in addition the shipping situation increases the difficulty. It is evident also that a supply should be carried by each user.

Booklet Describing "Anchor Brand" Colors

In order to avoid delay and secure good dependable color, it is advisable to place an order early.

The descriptive booklet will be sent upon request.

Acme Motor Truck Co....850
American Clay Machinery Company...............911, 912
American Dressler Tunnel Kilns, Inc...........................844
American Pulverizer Co....918
Armstrong Cork & Insulation Co...........................854

Baird Mach. & Mfg. Co......896
Ball Engine Co....................847
Beighlee Electric Co.........898
Bonnot Co...........................840
Bristol Co............................896
Broderick & Bascom.........895
Brown Instrument Co......858

Canton Grate Co...............899
Carpenter & Co..................919
Celite Products Co.............894
Chambers Bros. Co...........920
Chase Fdry. & Mfg. Co....917
Clarage Fan Co.................908
Classified Ads...............924, 926
Crescent Belt Fastener......893
Cyclone Grate-Bar Co......901

Didier-March Co...............919
DuPont Powder Co............923

Eagle Iron Works.............894
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Exner, J. E..........................892

Fate Co..................................927
Freese & Co...........................852
Fruehauf Trailer Co............842

Gandy Belting Co...............905
General Electric Co...........857
Goodrich Co.......................855

Hardinge Bros., Inc.............893
Harrington & King Perforating Co.................899
Hendrick Mfg. Co...............917

International Clay Mach'y Co. 843

Jackson & Church Co......907

K-B Pulverizer Co.............895
Keystone Driller Co...........900
Kissel Motor Truck Co....906

BRICK
and
CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

The Coming of An Adequate Common Brick Organization Is As Sure and As Irresistible As the Tide

THE ECHOES from the conference in Chicago on Monday, March 18, between association leaders in the clay products industry and other brick men had scarcely died out when active steps were being taken to form what has been termed an "adequate" common brick manufacturers' association. It will be remembered that while face brick, paving brick, hollow tile and other branches of the clay products manufacturing industry were admitted at this conference, to be well organized with authority to obligate the members of such associations to whatever extent is deemed necessary in the promulgating of a common plan to force a recognition of the value of clay products in the existing crisis, the common brick industry was stated to be thoroly disorganized, for the most part.

It was the positive opinion of nearly every one present at the March 18 conference that the common brick industry ought to get busy and organize a *business* organization as quickly as possible. The work of organizing such an association is of necessity a slow process. While nothing definite can be stated at this writing, those who are interested may expect an announcement of a preliminary organization meeting very shortly. Things are developing in Washington which make immediate action imperative for the continued progress of the government's war construction program, and the welfare of the common brick manufacturer.

It is very evident that the purpose of the proposed new adequate common brick organization is either badly misunderstood in some quarters or wilfully misrepresented. It has been said: "What we want to consider just now is whether there is a crying need at the present time for organized effort on the part of common brickmakers, or of makers of any kind of brick, for that matter, to go to Washington to protect themselves from rulings that may be made against their interests or to secure special favors or priority that otherwise would be lost."

This is *not* the primary purpose for which the new common brick organization will be formed. Primarily, it will be a selling organization, with the government as the biggest customer. The fuel question has been definitely settled—settled in such a way as to provide for the greatest freedom in production in the future should necessity demand it. What the brickmaker should be most interested in now is: *"What can we do to help the government get the brick it needs for its tremendous construction program in* 1918. The new and adequate common brick organization intends to answer that question for every brickmaker who wishes to affiliate himself with it. *A word to the wise is sufficient.*

An adequate *business* organization—a national organization made up exclusively of common brick manufacturers, is coming. It is coming because it is a necessity.

* * *

Further Evidence of Brick's Part in Government's Housing Program

IN LAST ISSUE the increasingly important part which clay products are destined to play in the government's housing program was pointed out. Since that time the United States Shipping Board has announced that seven large housing projects for shipyard workers have been agreed upon: namely, at Hog Island, Newport News, Camden, N. J., Chester, Pa., Bristol, Pa., Sparrows Point, Baltimore and Wilmington, N. C., the total cost to be about ten million dollars. The most extensive of these operations will undoubtedly be that near Camden, N. J., where it is stated contracts have already been let for nine hundred and seven houses, at an average cost of $2,070 each, mostly of brick.

* * *

Keep An Eye on the Future

IT CANNOT HELP but be apparent to those who are watching the trend of current events insofar as they apply to the clay products manufacturing industry, that we are fast getting on to a war basis. Government restrictions, particularly with regard to fuel, are practically eliminating the manufacture of products which, while highly essential in peace times, are not directly contributive to winning the war. A distinct development along this line is the recent announcement of the National Research Council, Edward W. Washburne, chairman of the ceramic subcommittee, recommending that all effort be turned to the production of clay products needed in the winning of the war such as fire brick and refractories, chemical stoneware, electrical porcelain, etc., as well as certain clay products which the government will need in great quantities but the character of which has not as yet been made known.

Amid all this readjustment, however, we would do well not to overlook the period that will come after the war. We must not forget that conditions will not always be as they are now. Bankers, merchants and manufacturers who are vitally interested in foreign trade are raising their voices in a loud cry these days warning the government that the American people should be prepared for the competitive warfare that will come when peace has been signed. Clay products, of course, will not be largely exported, altho there is evidence that considerable opportunity for the development of foreign trade in this commodity will be offered. A. De Gallaix, a Belgian ceramic engineer and clay products manufacturer who is now a refugee in this country, gives us a very interesting insight into the possibilities for trade in his country following the cessation of hostilities. His article, which appears on another page of this issue, should receive careful reading on the part of all interested.

There is much to be done *now* in looking after our markets after the war. Refractories manufacturers, operating under peculiar war time conditions, with demand far exceeding supply, are pursuing a very careful sales policy which will insure them maximum benefit when peace has been signed. In addition to this, some fire brick manufacturers are beginning to cultivate the dealer field with a view toward producing some favorable connections, that not only will prove profitable now but will bring in large returns after the Kaiser has been "canned."

It behooves all of us as clay products manufacturers to study the trend of current events very carefully to note what effect they are having and will have on the prospective demand for clay products after the war. We should be busy planning publicity and promotion campaigns and collecting engineering data, in so far as possible, and in general making ourselves ready for a terrific drive for business when peace has been signed.

⁂

Must Use Judgment

REPORTS from all sections of the United States indicate that there is a large amount of building labor idle.

Boston, for instance, states that in New England there is much unemployment of workmen in industries made idle by war conditions, and that the major part of these idle workmen cannot be employed on war work, partly because they are not fitted for it and partly because there is no opportunity for their employment, and that industries and men are becoming dislocated and demoralized.

Similar information comes from Worcester, Mass., where building labor of all kinds is becoming more plentiful and from Providence, R. I., where it is stated there is much complaint because of lack of work.

In New York City there is a marked degree of idle labor above the draft age in building operations. Buffalo states that there is no shortage of building labor in that city but that rather there is need for employment of labor. The same condition obtains in Rochester. Many mechanics in the building line are idle in Pittsburgh. Cleveland reports an excessive supply of labor in basic trades such as masons and carpenters. Cincinnati states that there is an ample supply of labor, mostly of experienced men forty years of age and up, that much labor is unemployed and that any further restriction of building operations would be destruction. Detroit and Grand Rapids as well as Indianapolis report idle labor with supply plentiful in the building line.

In Chicago about sixty per cent. of the eighty thousand men belonging to unions in the building trades are idle.

We could enumerate city after city in which similar conditions exist.

The Capital Issues Committee of the Federal Reserve Board has stated that it wishes to avoid so far as possible the creation of idle labor in passing on what shall and what shall not proceed in the way of projects that will have to be financed by stock or bond issues. The Committee recognizes something of the present condition but states that it cannot be helped inasmuch as a period of readjustment must necessarily intervene between a peace time and a war time basis in America's industries. As logical as such reasoning appears, and as capable as the Committee is, it hardly seems fair and just to allow men to remain idle and starve when their efforts can be diverted to a productive channel by proceeding with some of the building that is now being held up because of the desire of promoters to observe the spirit, which Secretary of the Treasury McAdoo urges, that all unnecessary building be stopped at this time.

There are countless instances where labor is available as well as material, where it would not interfere with the winning of the war to proceed with building operations. We do not believe that it is the intention of Secretary McAdoo to be absolute in his restrictive recommendations. We believe he will recognize the advisability of proceeding with construction where so doing will employ idle men and will not require the use of much or any railroad transportation to get material on the job. Personally, we believe that such a course would not be a hinderance to the government's war program but would be decidedly a constructive effort.

It is evident that we must use our good sense and judgment in deciding what should and what should not be done in the way of building during 1918. We should not be moved by selfish desires or motives but by the common interest of the people of the United States.

A COST SYSTEM FOR $1.50.

Sounds pretty reasonable and certainly is when you consider that one good idea is worth a great deal more than that. Send your $1.50 to Brick and Clay Record, 610 Federal Street, Chicago, and get a copy now.

ROAD CONSTRUCTION CANNOT

Fortune is Indeed Kind to the Brick Manufactur
"Let Go" But That on Many Important Highwa

By Wald

SOME OF THE clay products men who have been in Washington in recent months for conferences with the Fuel Administration and other branches of the Government have told the officials that the industry can adjust itself to almost anything, if it only knew what to expect for the future, that is to say, what can be relied upon. No sooner, accordingly, did the industry "know the worst" than the promised energy and versatility in readjustment began to manifest itself. Once the Fuel Administration had "passed sentence" by announcement of the percentages of restriction in the various branches of industry that resourceful men in the trade struck out to make the best of the unwelcome conditions.

CLAY PRODUCTS MEN ACTIVE

Two separate and distinct lines of action are being developed by producers in the brick and clay products field. On the one hand there is the obvious necessity for making the most of the remnant of regular commercial demand that remains, demand that is, of course, adversely affected by the attitude of the banks with respect to financing improvement enterprises of any kind. On the other hand there is taking form rather noteworthy constructive effort which aims to find larger place for clay products in the category of "war necessities."

In "rationing" the brick and clay products industries on coal and oil, the Fuel Administration made it clear that exceptions would be allowed and concessions granted, if need be, in any instances where there was involved the production of staples or specialties needed for any phase of the successful prosecution of the war. Far-sighted clay products men have needed no broader hint than that. They have busied themselves in not a few instances to get their plants into the category of factories operating on "war contracts" and to thereby win coveted indulgences in fuel, in transportation facilities, etc.

HOLLOW TILE INDUSTRY TRIUMPHS

One manifestation of this determination to square the industry with the war schedule is seen in the triumph of the hollow building tile interests in securing the adoption of tile construction instead of frame with stucco for the buildings henceforth to be erected for emergency war purposes—for instance the "overflow" office buildings that will cover scores of acres of land at the seat of government. Another trade expedient for getting in harmony with the spirit of the times is seen in the effort of the brick interests to have the Government make use of brick, especially the stocks of the times is seen in the effort of the brick interests to struction and for such new working quarters or residential accommodations as it may be necessary to provide for Uncle Sam's war workers, be they clerical employes of the executive departments, shipyard workers, munitions makers or what not.

After all, however, the agitation that promises most for the brick and clay products industry,—or, at least, that would affect the most branches of the trade, is the movement which aims as a reconsideration of the policy that would suspend road construction and road repair for the duration of the war. So obviously is this idea of marking time on all road work a mistaken policy that every clay products man is entitled to join in protest quite aside from the fact that junking of that drastic policy will mean business for him. Unnecessary road work, such as the opening of new highways that are not actually needed should, of course, be postponed but it is apparent that the theorists went entirely too far when they proposed to cut out virtually all road work as a wartime economy.

ROAD WORK ESSENTIAL.

Fate is, indeed, playing right into the hands of the clay products men in proving that not only may the roads not be "let go" but that on many important highways increased attention to up-keep will be necessary. The railroad transportation conditions that are compelling the greatest possible proportion of freight to be diverted to motor truck routes are responsible for this state of affairs. Heavy express and freight trucks rumbling, day after day, over intercity highways have within the space of a few months "broken down" some of the most famous roads in the country, as, for example, the boulevard between Baltimore and Washington. It is being clearly disclosed all of a sudden that money must be spent with fair liberality on the upkeep of these roads if the original investment is not to be jeopardized and the very fact that the highways are now playing so important a role as arteries of commerce injects an element of compulsion that was not present when the principal use of these same highways was for pleasure driving.

MOTOR TRUCKS FOR PARCEL POST DELIVERY

Most significant, perhaps, of all the influences that are working for a revision of the ban that some extremists would fain place on road-making enterprise is the realization forced upon the United States Government that road making here in America can be mighty important to wartime efficiency.

For one thing, Uncle Sam has had, in his experience with the roads in the vicinity of various army camps and cantonments, a demonstration of what poor economy it is to attempt to worry along with poor roads. As a result of the lessons that have been learned we now observe large detachments of enlisted men engaged in road building or road restoration in the vicinity of various military posts and a beginning has already been made, thank goodness, in putting to work on the roads interned Germans and German prisoners. Another thing that is causing bad roads to get on Uncle Sam's nerves is the circumstance that the Post Office Department is now launching an elaborate scheme for placing 1½ and 2-ton trucks in service carrying Parcel Post

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Proving That Not Only May Roads Not Be
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mail on routes between principal cities and in the country districts. To extend this service, with which a beginning has already been made, one house of Congress has voted an appropriation of $300,000 and the other house has authorized the expenditure of $100,000, leaving a compromise to be arranged between these two sums.

The outstanding fact is that the Post Office Department is going ahead on this trucking proposition on a large scale as a means of getting the produce from the farms to the cities more quickly than has heretofore been possible, thereby encouraging agricultural production and helping solve war-time food problems. As tho the mere circumstances of truck operation on thousands of miles of country roads were not an incentive for road improvement there is the added fact that the Post Office Department is firmly committed to the short-body truck. In order to enable turns to be made in narrow country roads and to facilitate manipulation at the loading platforms of the postoffices in congested city districts the Department is bent on using only types of trucks that have a wheel base of 96 inches or there abouts. This short wheel base, with its sacrifice of riding qualities, makes it imperative that reasonably good roads shall be provided wherever motor routes are maintained.

URGENT NEED FOR WELL DRAINED ROADS

While the urgency of the responsibility for getting farm produce to the consumers and the necessities of military transport are dictating the provision of paved or other high-grade roads the severe weather of the past winter has demonstrated, as naught else has ever done, the importance of well drained roads adequately fortified with properly constructed culverts, etc. Heavy snows, followed in some sections of the country by torrential rains, have given to professional and amateur road builders a lesson of convincing emphasis with respect to the wisdom of liberal expenditures for drain tile, sewer pipe, etc.

UNDERGROUND CONDUITS

Speaking of the lessons of the past winter in this connection it may be permissible to digress to the extent of an observation that another sequel of the severe weather conditions is to be found in agitation for the provision of conduits that will enable the placing of telegraph lines underground. There were periods during the past winter, for instance, when in the face of the necessity of transmitting war orders and communications of the utmost importance, the national capital was virtually shut off from wire communication with some of the principal cities of the country for intervals as long as 48-hours. Men in the clay products industry who have been called upon for material in connection with the placing underground of long-distance telephone cables would welcome an opportunity to, in larger measure, make the telegraph lines of the country "storm-proof."

That the United States Office of Public Roads is alive to the importance of moving forward in road improvement was eloquently attested the other day by Director L. W. Page, who remarked "The great trouble today is to meet the great amount of traffic going over our roads. We have not yet arrived at the ideal road. Just as fast as we get something stronger they quadruple the weight of the loads. In New York City last year they were hauling material for the subway with 15-ton trucks; as a result they broke up granite cobblestones." At that, this expert admitted that the best type of brick construction is in durability equal to any road that has been constructed in the course of the extensive experiments of the United States Government. During the past year the Public Roads Office has devised a new impact tester for testing sections of brick pavement constructed with various types of base, cushion and filler.

GOVERNMENT TESTS TO BE CONTINUED

Without slackening pace, altho the war has drawn away some of the best highway engineers in the service of the Government, the Office of Public Roads will continue its road and bridge foundation tests. For this work also special apparatus has been devised. The object sought is information on the distribution of pressures thru fills such as occur on highway bridges, culverts, etc. Thus far sand alone has been investigated but eventually the investigation will extend to clay, sand-clay mixtures, etc. Field experiments of pressures on actual structures are also under way. An enormous number of tile drains are destroyed annually due to lack of knowledge of earth pressure upon them and it is the hope of the Federal experts to eventually supply drain tile men with scientific data that will enable them to more closely conform to the requirements of any contract that may be obtainable.

Getting back to our main theme of the extent to which the cause of paving, road building, etc., in war-time is looking up, it may be observed that much depends, of course, upon the attitude of the national administration with respect to issues of bonds by states, counties, municipalities and other political divisions for road-building and street improvement purposes. Asked with reference to this matter the other day Paul M. Warburg, vice-governor of the Federal Reserve Board, who is at the head of the body vested with the power of approval or disapproval of bond issues, etc., said: "Roads must, of course, be kept under repair, but for the present the building of highways should stop where possible, except where they are of military importance or of great economic importance. Where there is a possibility of bringing goods to market, foodstuffs particularly, or where they cannot be produced owing to a lack of public roads and where the Department of Agriculture advises us that this is the case, we say all right."

Why Not Fireproof Base Hospitals?

When the cantonments were undertaken, such speed was necessary and low cost so desirable, in view of the total prospective expenditures, that wood was chosen as the construction material with but little debate. Now fireproof and semi-fireproof types are being adopted for warehouses and piersheds, but inflammable construction is being used for the new cantonments and base hospitals. Whatever arguments may apply on cantonments, we think it a grave error to build base hospitals of firetrap construction, particularly when a semi-fireproof type can be built as rapidly as wood and at an increased cost of only ten or fifteen per cent.

At cantonments there are a great many men available for fighting and for fire-patrol duty. Moreover, they are able bodied. The hospitals are to be filled with men largely unable to help themselves. Medical and nursing staffs are hardly large enough to remove many patients in the time likely to be necessary with the inflammable cantonment type of building. Further, the fire hazard in hospitals where buildings are connected by wooden runways (for the transfer of patients) is inexcusable.

Adequate provision against fire is being made for warehouses and piersheds; why not an additional expenditure of ten or fifteen per cent. to protect our men? If stucco and hollow tile, brick and concrete are required for the safety of goods, why not for that of human beings?

The cantonment division has shown itself open-minded in the selection of semi-fireproof and fireproof types for certain purposes. With concentration on this problem and a free hand, we are sure it will elect to use a better construction for hospitals than is now planned. The all-timber type for hospitals is an injustice to those who have once risked their lives and are sent home to recover. It is exposing them to mortal danger a second time.—*Engineering News Record.*

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Society for Testing Materials To Meet

The twenty-first annual meeting of the American Society for Testing Materials will be held at Atlantic City, N. J., on June 25-28, 1918, with headquarters at the Hotel Traymore.

Friday afternoon, June 28, at 3:00 p. m., a session will be held on ceramics and road materials, the program being as follows:

Report of Committee C-3: On Brick. A. V. Bleininger, acting chairman. Report of Committee C-4: On Clay and Cement Sewer Pipe, Rudolph Hering, chairman. Report of Committee C-8: On Refractories. A. V. Bleininger, chairman. The Necessity for Inspection and Testing of Refractory Brick. C. E. Nesbitt and M. L. Bell. Silicia Cement, R. J. Montgomery. Report of Committee C-10: On Road Materials. L. W. Page, chairman. An Abrasion Test for Gravel and Stone for Road Purposes, H. H. Scofield. Sampling of Deposits of Road Stone and Gravel, L. Reinecke.

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Government to Aid in Home Building

Because of the great scarcity of homes at San Pedro and in fact all around the Los Angeles harbor, the government is planning to take immediate steps toward the erection of suitable homes for the shipbuilders who are employed at the immense ship yards and other institutions located in this locality, and for the thousands of additional workmen who are being added to the forces. The housing situation has been in a critical state for many months and it is now stated upon good authority, that the government will spend several millions of dollars to provide proper housing facilities for these workers. It is expected that the work will begin on these homes in the very near future.

The statement has been made that $18,200,000 of the congressional appropriation of $50,000,000 will be used in the erection of homes at San Pedro, Long Beach and San Francisco, the three largest concerns figuring in this great need for homes being the Los Angeles Shipbuilding and Dry Dock Co., the Craig Shipyard at Long Beach and the Southwestern Shipbuilding Co., at San Pedro. The Union Iron Works, Schaw & Batcher, Pacific Shipbuilding Yards and Hammond Shipbuilding Co. at Eureka, Pacific Coast Shipbuilding Co.'s plant at Bay Point, Hanlon Dry Dock and Shipbuilding Co.'s plant and the proposed plant of the Union Construction Co. and the Parr-McCormick Co., at Oakland, are also to receive government aid in the housing of their employes.

Brick manufacturers and dealers are naturally very much interested in these projects and it behooves them to be "on their toes" if they are not to be outdone by the lumber dealers, who are, of course on the job.

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Good Roads Men Convene in Arkansas

Approximately 500 delegates from 24 states were registered on April 15 for the opening session of the United States Good Roads Association. This is the largest representation that has attended the first day's session of any convention in the history of the association.

Among those present the first day of the convention were Senator John H. Bankhead of Alabama, Senator Joe T. Robinson of Arkansas, Charles S. Hamlin, a member of the Federal Reserve Board at Washington, who came as the representative of Secretary of the Treasury, Wm. G. McAdoo, A. G. Bathbelder, chairman of the American Automobile Association and Morris O. Eldridge, representative of the director of the United States Road Department at Washington.

Governor Brough, who is first vice-president of the association, gave the address of welcome and acted as chairman of the convention in the absence of Senator Bankhead. J. W. Mellor of the Western Paving Brick Manufacturers' Association, Kansas City, Mo., was one of the speakers at the evening session.

On the second day of the gathering, short speeches were made by members of the various state highway commissions, all being followed by open discussions on highway questions.

Patriotic speeches featured the luncheon which was served at the Hotel Marion and the music was furnished by the band from Camp Pike.

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Heavy Increase in 1917 Fire Clay Output

Fire clay constituted about three-fourths of the quantity and value of all clay marketed in 1917. It also showed the largest increase, gaining more than 1,300,000 tons and $3,000,000. Pennsylvania was the leading state in the production of fire clay, but was second in value; it reported about 30 per cent. of the quantity and 25 per cent. of the value of that marketed. Missouri, owing to the higher prices received for fire clay, was first in value tho second in output.

BURNING FIRE BRICK *with* NATURAL GAS

Natural Gas Being a Good Substitute for Coal in Some Districts, Manufacturers Who Have a Supply of This Fuel Available Will be Particularly Interested in the Many Factors Which Play Such an Important Part in the Burning of Fire Brick, as Brought Out in This Article

By C. A. Stone; Cr. E.
Basic Products Company, Kenova, W. Va.

IN SOME LOCALITIES natural gas occurs in abundance and the price, of course, is governed only by the demand. In these districts natural gas is a very good substitute for coal as a fuel and in many cases will cut the cost of burning as much as twenty-five to thirty-five per cent. Especially has this been found true in points in the states of Ohio, West Virginia, and Kentucky. One plant in Ohio carried on a series of experiments in regard to the saving in fuel and labor effected by the use of natural gas in substitution for coal and as a result of the experiments has found natural gas to be cheaper and hence is using it constantly.

TYPE OF KILN

The best type of kiln for the use of this fuel is, it seems, the Dressler tunnel kiln. However, this kiln as yet is still comparatively new to the industry and has had but few installations, all of which have, however, proven very successful.

Fire brick manufacturers in Ohio, Northern Kentucky and West Virginia, who prefer the rectangular kiln have used for a number of years a very simple type of floor bottom. This bottom consisted chiefly of a main flue running thru the center of the kiln to stacks at both ends. While fairly good fire brick was produced, it was found after a number of trials that only one section of the kiln (that part in the center) was burned well and that the sections on either side were burned to a temperature at least three cones (108 deg. Fahr.) lower.

FLOOR BOTTOM OF KILN

Later it was decided to put in a simple floor bottom consisting of a main draft flue and cross-head flues in several of the kilns for experimental purposes. The main draft flue was partitioned off at the center of the kiln so that each stack furnished draft for one-half of the kiln. This was done because it was noticed that in the previous arrangement, where one flue only was used, that at various times only one stack was furnishing the entire draft. Under this new floor arrangement the brick were evenly burned thruout the entire kiln, a better draft was obtained and the period of burning was cut from ten to seven and one-half days.

Altho good results were obtained by using the above floor bottom the manufacturers were not satisfied and tried several burns on a bottom constructed in a manner as shown in Figure 2. As illustrated by this sketch, the bottom consists of two main flues, A and B, leading to stacks C and D, and alternating open and blind flues which carry the draft to the main flues. This floor bottom is rapidly being adopted for rectangular kilns where natural gas is used.

This Shows How Easy It Is to Start a Kiln. Fireman is Shown Turning Valve on Pipe Which Is Connected to a Main Overhead. Each Kiln Has Such a Valve. This Also Gives a View of the Fire Box.

Most clay products men who burn with natural gas prefer the round down-draft kiln because they are less expensive to construct, give greater fuel economy and require less time in burning. The type of bottom best suited for these kilns is one of the center well-hole type or a bottom consisting of a main draft flue running thru the center and alternating open and blind cross head flues. Both of these floors have given good results in this territory but the center well-hole bottom is given the preference by most manufacturers.

This Shows a View of a Kiln Fired With Gas. Note the Gas Pipe Connections as Explained in the Article and the Simplicity of the Fire Box.

FIRE BOX REQUIREMENTS

One of the biggest advantages in using natural gas is the simple fire box that is required. One burner can take care of about ten kilns and no cleaning of fire boxes is necessary as is the case when coal is used for fuel. The fires are very easily regulated and the time of burning can be reduced over that required when coal is burned. Another great advantage is that the ware can not be ruined during the water-smoking period. It is a well known fact, when burning with coal that care must be taken not to rush the burn during this period. It is not an easy matter to tell by mere observation whether or not the firing is being carried on too rapidly during this stage, and not infrequently a careless burner will bring up his heat too rapidly and cause the ware to be cracked or water-smoked. With gas, however, this is impossible as the water-smoking period takes care of itself and we might say is carried on automatically. During this period as the moisture is driven out of the ware the kiln becomes filled with it, and if the burner tries to raise the heat too rapidly the fires will go out due to the back pressure exerted by the accumulated unburned gases and the moisture which must be driven out slowly.

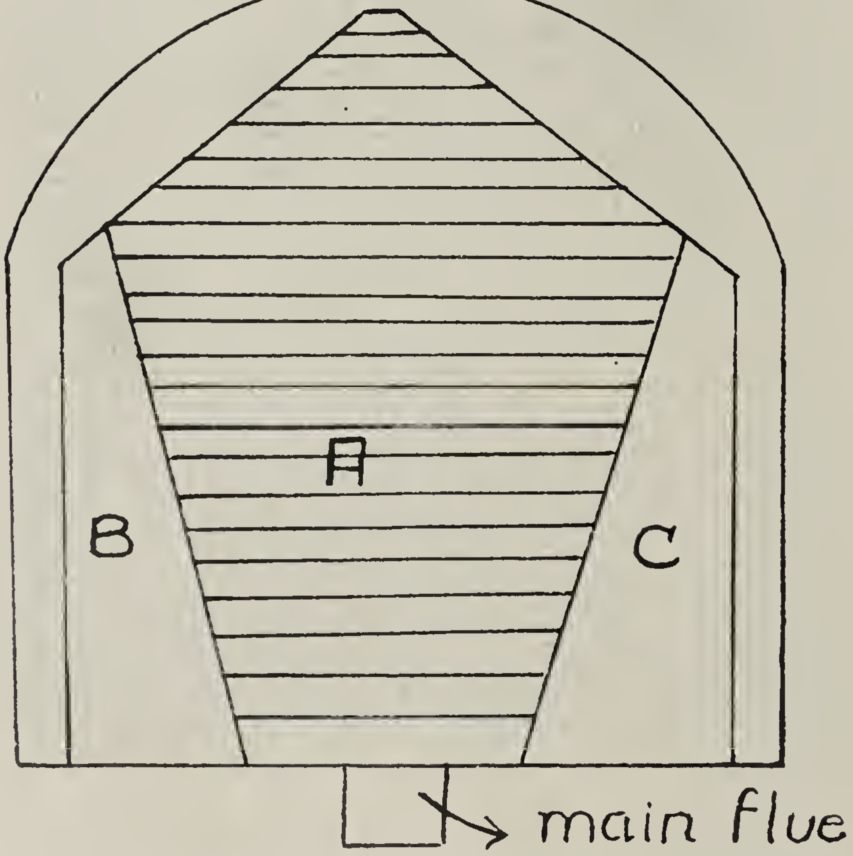

Fig. 1. Shaded Part "A" Shows Section of Kiln That Is Burned Well Where Main Flue Only Is Used. "B" and "C" Burned at Least Three Cones Lower.

The type of fire box used is similar to that shown in the illustration. The pipe line runs alongside the kiln and is connected to the main gas line. To this line at each fire box is attached two small pipes to form a "U," or preferably three pipes to form a double "U." These tubes or pipes fit into the small openings shown in the upper part of the fire box and serve as the burners. Above these small openings is another opening about 4¾ by 2½ inches. Thru this opening the condition of the flame is observed and the torch is inserted for igniting the gas. A gas pressure of fourteen pounds is used. When the gas is turned on the pressure exerted by it, draws air from the atmosphere thru the small openings mentioned above and thus furnishes the air for combustion.

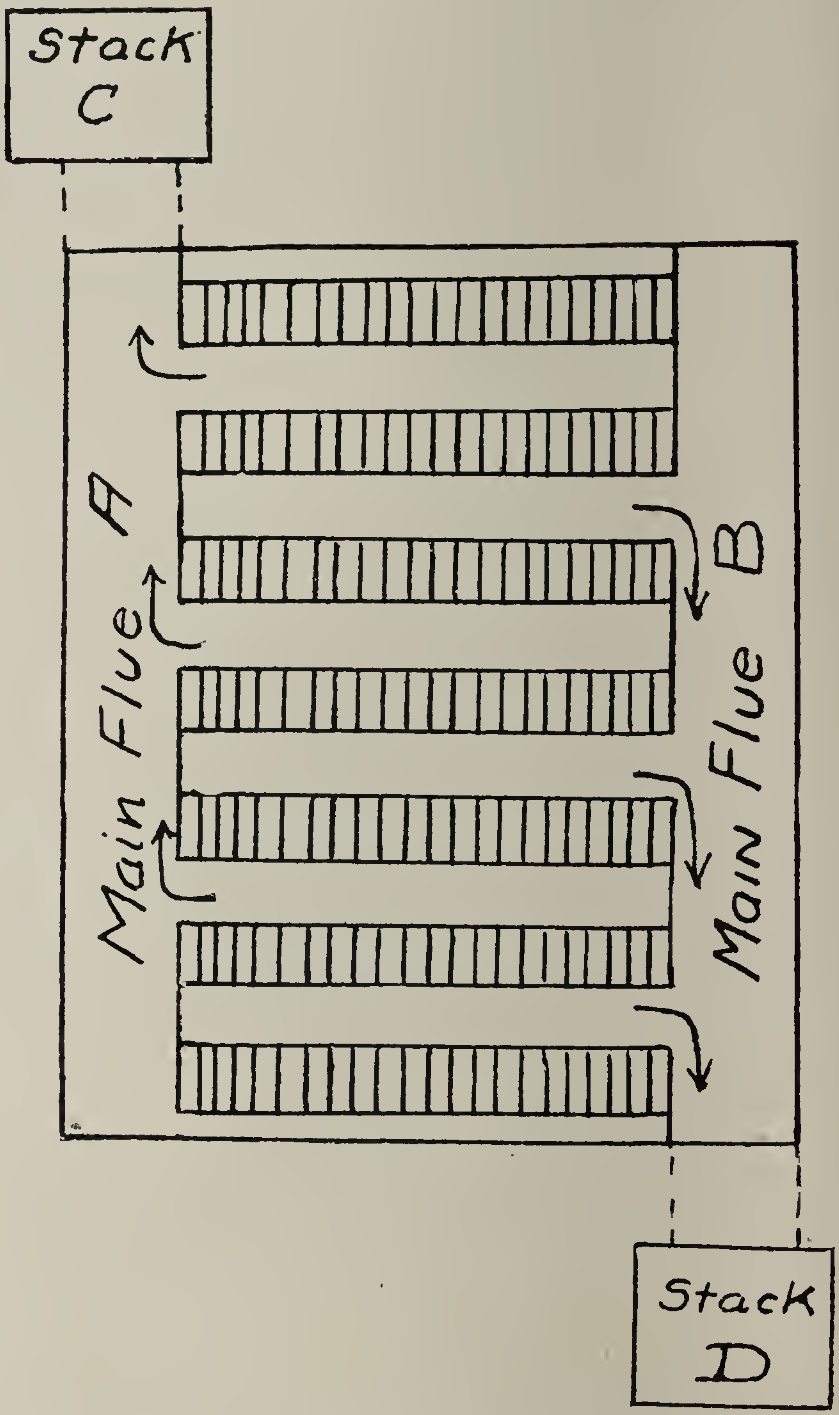

Fig. 2. Type of Floor Being Adopted for Burning by Means of Natural Gas.

EACH FIRE BOX REQUIRES TWO BURNERS

A general practice followed by clay products men who burn with natural gas has been to use two burners for each fire box, each having an inside diameter varying from ⅛ to 3/16 inch. Investigation has shown that the burners were entirely too large to effect any degree of efficiency as far as economy and fuel is concerned. The volume of gas delivered by the burners was too great in comparison to the amount of air sucked in to produce combustion and as a result fuel was being wasted. By cutting down the diameter of the burners to 1/16 inch and using three burners instead of two we were able to complete our burns with a small amount of gas and at the same time the relative amount of air was increased and complete combustion was allowed to take place. Another feature of utmost importance and, strange to say, overlooked by a great many manufacturers, is that the center of the burner should coincide with the center of the opening in the gas tile into which the burner is inserted. If this is neglected the gas will strike the tile thus causing carbonization to take place. It has been estimated that at least 33⅓ per cent. gas is wasted due to the above cause.

METHOD OF PROCEDURE

The system followed in burning fire brick with natural gas on our plant is as follows: When the brick have received the proper amount of drying and have been set in the kiln ready for burning, one burner is lighted at each fire box. After the burners are inserted the open space around them is closed by means of a fire clay mud. Enough gas is turned on to give a very yellowish flame. The gas flame is then gradually increased as fast as the kiln will take the heat. The speed at which the heat in the kiln is increased will depend upon the draft conditions. This heat is maintained for forty-eight to sixty hours, which is the time required for water-smoking. The temperature is then raised as rapidly as possible until cone fourteen (2,570 deg. Fahr.) is reached. When this temperature is attained the kiln is dampered for eight hours and then the burn is complete.

One of the difficulties in burning by natural gas is that a cream colored brick is obtained instead of the usual straw colored brick. Thus, great care must be exercised during this last period of burning because it is at this stage that the straw color is put on the ware. We find that this is best done by eliminating any form of damper and merely using air as a damper. The operation is as follows: Instead of having an opening large enough at the side of the stack to allow a plate damper to be let down and cut off the draft, an opening is made about eight inches wide and having a length equal to the width of the stack. This opening is covered with fire clay slabs during the early stages of the burning. After a point in the burn has been reached when dampering is necessary, the opening is partially uncovered by slightly moving the slabs. This causes an inrush of air and the draft is thus checked. At this point great care must be exercised, for if the opening be totally uncovered the inrush of air will become too great and the back pressure will cause the flame to shoot out of the fire boxes, causing a condition to prevail which will ruin the ware. Enough air, however, is let in to cause the flame to play lazily out of the fire boxes. If the above practice is followed a very good color will be obtained, and the cost of installing dampers and replacing them when they have depreciated to such an extent that they cannot be used, is done away with.

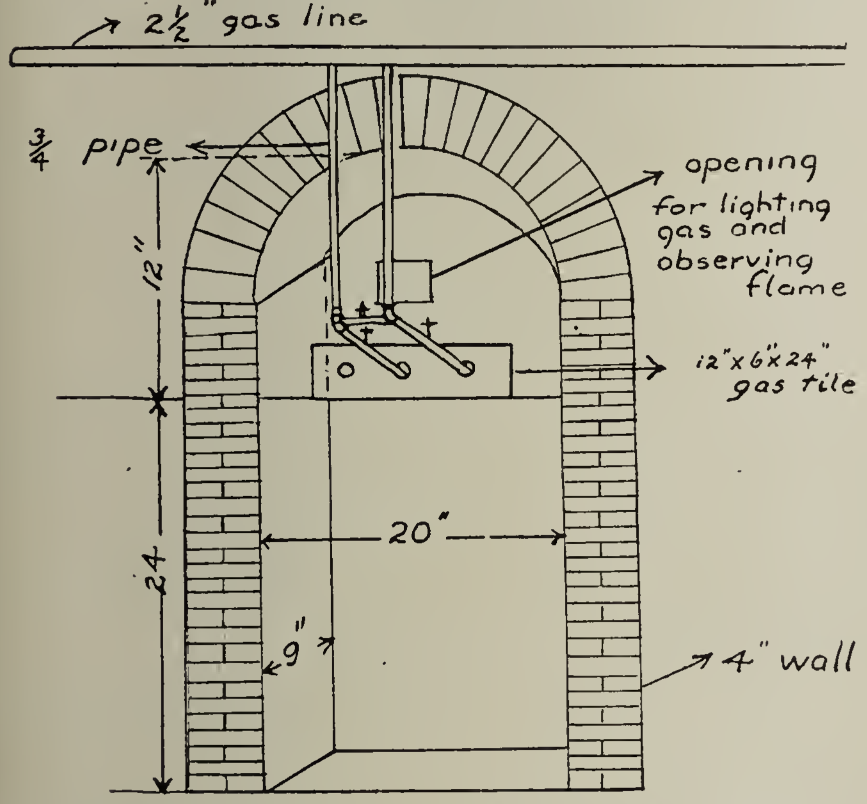

Fig. 3. Solid Bag-Wall 12 Inches by 4 Feet. Pocket Is 12 Inches by 18 Inches.

Another difficulty often encountered was the burning up of the bag-walls of the kiln during each burn. We replaced the square bag-walls by round ones, and altho a marked improvement was noticed the bags still required repairing after each burn. Continuous bag-walls were then constructed and this eliminated the trouble entirely. The height of the bag-wall is 4 feet 6 inches and the fire-flue is 9 inches by 18 inches.

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Co-operation—A Support of Optimism

"The clay industry produces a number of products which are essential to the successful conduct of the world's war for liberty," says C. B. Platt, Secretary of the Permanent Buildings Society, Des Moines, in a recent letter to Iowa clay products manufacturers. "It is therefore an important industry and any individual therein who injures it, thru ill-advised acts in an attempt to better his own little self, places himself in a class of a name far more contemptible than that of slacker.

"Manufacturers of clay products must co-operate in the cultivation of optimism. The way to do this is to avoid business methods which develop bacilli of pessimism, and to co-operate generally.

"Clay manufacturers as a whole can not be considered as a greedy lot and they have evidenced little or no tendency to profit unduly in this the time of our nation's difficulty and peril. The minds of the majority are on greater ends. There is more or less of a pronounced development of independent conclusions regarding the 'desirable citizen' quality possessed by the clay-products slacker who wilfully destroys co-operation in an attempt to gain temporary advantage to himself and who asserts that it is impossible to produce a kiln of 100 per cent. good ware and, therefore, impossible to maintain even standards of quality, which in turn insure a fixed value in the ware and its economic service. The slacker also reserves to himself the privilege of co-operating with his fellow manufacturers to an extent which will enable him to learn of their practices and to use his knowledge so gained to his own selfish ends. He is not only a slacker but is like unto a spy who operates in and against his own country. He co-operates with his near at hand brother and protects his own sacred trade territory by a strict observation of a living price and uses the distant territory as a "dumping ground." The slacker is only worthy of contempt and should not effect the development of optimism in the minds of decent business men.

"It is necessary for clay products manufacturers to co-operate in the proper conduct of their business so that they may be able to

Pay a liberal income tax to the government,

Support the various war service organizations,

Buy Liberty Bonds,

Pay good wages to their employes,

Think in terms of Victory and to be generally optimistic. Therefore, every man who is responsible for the proper conduct of a clay products manufacturing plant should

STOP, OBSERVE AND THINK

"To sum it up, we must co-operate and co-operate with the idea of rendering a service to the country. In this co-operation we should first see that we do not over-produce, for over-production is a waste of vital power at this time. We should make every effort to develop as great a demand as possible in territory immediately adjacent to our production points. Co-operation means that we must endeavor to learn about our fellow manufacturers and of their methods and plans and not expect to learn and at the same time conceal; it means that it is necessary to meet together frequently to consider the questions affecting the industry and to seek a uniform method for meeting conditions in a way which will result in the best interests of all concerned. When the notice of another meeting of your association comes to you, answer it in person and get in line to co-operate. We must educate the consumer to the end that he serve his country well by making his farm produce a maximum crop and by safely preserving the crop in permanent buildings."

Property to Burn

The following is from a recent editorial in the Chicago "Tribune":

"On the same day the weekly U-boat report is published it is announced that fire losses in the United States were $30,000,000 greater in 1917 than in 1916, and $70,000,000 greater than in 1915. The fire insurance companies intend to apply a "super-charge" of ten per cent. to cover extra expenses.

"We are appalled by the wastage of ships and material caused by the submarine warfare, but we pay scant attention to the wastage caused by fire within our own borders. We establish fire departments, take out fire insurance, and trust to luck. The reward for our trustfulness is indicated in the enormous amount of property destroyed each year by fire. According to figures immediately available, fire losses in the United States amounted to $172,033,000 in 1915 and $213,539,670 in 1916. In Chicago alone the losses totaled $3,470,978 for 1916, which is equivalent to a loss of $1.37 for each man, woman and child.

"We are urged to save food and money. Only a rigid conservation of our resources, we are told, will win the war. Yet in 1917, we permitted thru carelessness or otherwise, nearly $250,000,000 worth of property to be destroyed. We not only failed to keep the total down to an average level—we actually allowed it to increase by a very large amount. We think we have a strongly developed sense of the sacredness of property and property rights, but it is a legal fiction. We have the same attitude as the boy with the little red wagon."

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MOTOR TRUCK LINE *from* DETROIT *to* BOSTON

AS AN OUTGROWTH of the successful operation of motor truck freight lines out of Cleveland, Ohio, and east and west along the shore of Lake Erie for a distance of sixty miles in each direction, plans are under way by a group of Cleveland and Ohio business men for the formation of a $1,000,000 truck line that will cover the territory from Detroit to Boston. In fact, in a private way, trucks already are running from the vicinity of Cleveland to Boston.

Details are not yet available, but according to F. L. Morgan, Cleveland manager for the Goodyear Tire & Rubber Co., a company is being formed to promote, on a large scale, the motor truck freighting. The move is made necessary, according to Mr. Morgan, because the few lines already established are now overburdened, altho in operation only a few weeks. The corporation to back the new movement will have in operation 100 large trucks. According to present plans, Detroit will be the western terminus and Pittsburgh the eastern point, and if successful, the route will be extended still farther east. The Goodyear company already is operating several trucks from its plants in Akron to Boston. The trip takes a week. More than 1,500 miles are covered.

Another big trucking enterprise which soon will be put into effect, is that of the Roe-Weed Bonded Auto Truck Co., organized by E. W. Weeden and Henry Roepke, of Newark, N. J., who were in Cleveland recently. Within a few days it is expected these trucks, running on regular schedules, will be traveling between Cleveland and Pittsburgh and between Erie, Pa., and Akron, Ohio.

Starting with three or four trucks, the Highways Motor Transport Co., pioneer in this form of freighting in the Cleveland district, has increased its number of machines until it is now running eleven out of Cleveland. "We had more business than we could handle, hence we had to have more trucks," says C. S. Richardson, president and general manager.

D. F. Hurd, of the State Council of National Defense, and former manager of the transportation department of the Cleveland Chamber of Commerce, states that a movement has been started by his organization to create a system by which trucks will return to Cleveland loaded, instead of empty, as is often the case. Return load bureaus should be established, according to Mr. Hurd. This would tend to reduce freight rates, he believes.

At the convention of the Ohio State Automobile Association, at Lima, Ohio, May 3, the problem of highway transportation was taken up, according to Dr. John H. Quayle, president of the Cleveland Automobile Club, and who also is chairman of the organization's good roads committee. At this convention it was believed plans would be formulated for the encouragement of motor truck freight transportation between cities.

"The motor truck is probably the most important factor that has aided the country since it entered the war, in view of the railroad congestion," says Dr. Quayle. "New regulations must be drawn up to meet this new form of transportation. Old regulations have been outgrown, just as modern traffic has progressed beyond the type of roads that were built even a few years ago. New conditions must be met by new types of pavements and new regulations." The question of return loads for the motor trucks now in operation also will be taken up at this convention.

BRICK CLUB HOUSE *for* LABORERS

A Handsome Brick Building With Floor of Red Tile Was Erected by a Brooklyn Concern as a Club House for Employes. A Beautiful Brick Fireplace is the Center of Interest Within the Assembly Hall, and This is Adorned With Patriotic Emblems and a Slogan That Encourages to Success and the True American Spirit

"BE AN AMERICAN"—this is the message that catches the eye of the visitor to the Longshoreman's Club at the Bush Terminal, Brooklyn.

The slogan "Be An American" burns in electric lights about a flag formed of incandescent bulbs, and occupies the most conspicuous position in the big room, the wall above the fire place.

This Handsome Brick Club House Is for the Use of Stevedores, Having Been Erected by the Longshoreman's Club.

Carved in an oak panel below the Stars and Stripes is a bit of sturdy American philosophy, believed by our forefathers who built up this country and a maximum that holds good today. It reads: "Success is not an accident. It comes to the man who does his work better than the other fellow."

It was not purely as a matter of sentiment that the business men who developed Bush Terminal placed our flag and the "Guide-post to success" before their longshoremen.

The importance of developing American citizens from the mass of foreign-born workers was recognized by this concern, one of the biggest employers of the country, with thousands of men on the pay roll, not alone as a patriotic measure but as a matter of increased efficiency.

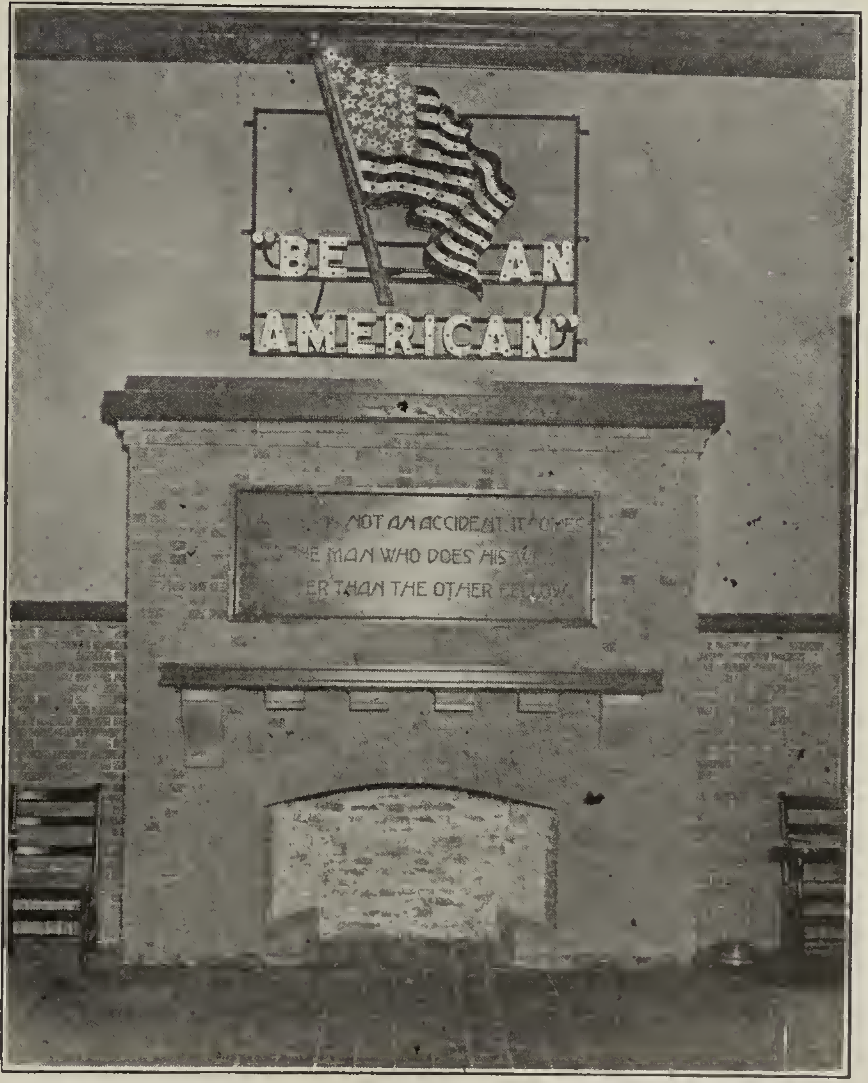
Among the stevedores who load and unload cargoes at the docks of New York harbor are foreigners from almost every land, tho enemy aliens are excluded now by a Federal regulation. Slavs and Finns, Hungarians, Irishmen and Italians; in short, men of nearly every nationality, are busy rolling hogsheads and shifting bales and cases.

Formerly when stevedores were waiting for work there was no shelter provided against the snow and rain except the saloons, most of them run by foreigners. At meal times these dirty and ill smelling quarters were almost the only places where the men could get hot soup, steaks, stews and other hearty food. That is the condition today at most of the docks.

But at the Terminal, this was discovered to be a mistake. The efficiency of the workers was lessened by exposure to the weather for hours while waiting to be taken on a job. Their physical condition was not bettered by herding in the water front saloons, bolting poorly cooked food and buying drinks in order to be allowed to sit around the greasy tables.

The foreigners who ran these places were likely to foster an alien spirit, and agitators found there an opportunity to spread doctrines of discontent. The pro-German feelings of many of these saloon keepers were shown in their defiance of the law at Newark, when they resisted the government regulations as long as possible. Such resorts breed disloyalty.

The Longshoreman's Club house was built to do away with these conditions that lead to inefficiency and labor trouble. It



Patriotic Signs Such as the One Here Shown, With Plenty of Comfort, Make Good Citizens.

is a susbstantial brick building of one story and a great assembly hall occupies most of the interior. At one side is an alcove with a kitchen and lunch counter, where food is sold very near to cost price, substantial and well cooked dishes suitable for a hard-working dock laborer. Coffee, tea, milk and soft drinks are sold, but nothing alcoholic. The tables and chairs in the hall are movable, and serve for meals, and, later on, for games. Each table has a checker board painted on its top.

The furniture can be arranged for amusements, as well, and at one end of the room is a platform for the piano or entertainers. It is well adapted to showing moving pictures; in fact, it is just right for social gatherings; light and cheerful, well warmed in winter and cooled in summer.

This is the only place at the Terminal where smoking is permitted. It is free to men employed there without dues or initiation fee.

All these matters are considered as business rather than as philanthropy. It is not mere welfare work to see to it that those who work for us are kept warm and dry and sufficiently fed. We do that much for our draft horses. It is a straight business proposition, but unfortunately such good judgment is not found in all business enterprises. The influence of such treatment upon the foreigner is worth considering. He is here to stay. We need him and we want his good will; for he does much of the work essential to our success in the war.

Will he do better work if he is heart and soul with America? Not a bit of doubt as to that!

Therefore it is to the interests of all to win his affection for this country.

In this club house, the right way has been found. The men are given these physical comforts and necessities, and then when they see the American flag they are willing to believe that it stands for "a square deal" for the workingman. Americanization in practical form like this will bring to naught the efforts of pro-Germans and baffle the destructive and insidious professional agitators.

TRUCK EARNS $3811.69 *in* FIVE YEARS

A GREAT DEAL has been written from time to time concerning the motor truck as a solution for the brickmaker's delivery problems, both from the standpoint of economy in operation and the widening of a market, yet in the experiences of the Los Angeles Pressed Brick Co., with offices in the Frost Building, Los Angeles, Cal., some new points of interest come to light.

The Los Angeles Pressed Brick Co. have plants at Los Angeles, Santa Monica and Point Richmond, Cal., manufacturing pressed, enameled, face, paving and common brick, fireproofing, refractories, roofing, mantel, faience and quarry tile, sewer pipe, and architectural terra cotta.

In April, 1911, the company installed a three-ton motor truck and in the first four and a half years, realized net earnings of $3,811.69 on this one truck. The truck was credited with all deliveries at the same rate per ton or per thousand brick as was paid for team delivery, which was $5 per day for driver, two horses and a wagon. The truck was charged with chauffeur's and helper's wages, all repairs, tires, gas, oil, taxes, liability insurance and depreciation figured at twenty per cent. a year, which is, of course, very liberal. Up to December 31, 1915, the total earnings, i. e., excess of income over expenses, were $3,811.69. The entire truck investment was absorbed by earnings and written off in full at the end of March, 1916—twenty per cent. per annum for five years.

The Los Angeles Pressed Brick Co. has successfully handled its pressed and enameled brick, rough face and texture

Three-Ton Motor Truck, Loaded With Hollow Tile, Which Has Made an Excellent Record on the Plant of the Los Angeles Pressed Brick Co.

brick, hollow tile, sewer pipe, flue lining, fire brick, common and sewer brick with its trucks. In handling the finer class of face brick, straw is used, the brick being loaded face down on a protecting layer of straw. The body side boards of the truck are removable, but all the material hauled is loaded strictly by hand.

Fleet of Motor Trucks in Daily Use by the Los Angeles Pressed Brick Co., Which Are Giving, and for the Three Years of Their Use Have Given, Excellent Service.

In writing the manufacturer of the truck regarding the good work being done by the three-ton vehicle, after being in operation for over four years, Howard Frost, president of the Los Angeles company, said: "And we believe our truck will be good for three to five years longer."

* * *

Organization's Necessity

The difficulty with contractors and material supply houses in this vicinity (Los Angeles, Cal.) relative to association benefits, is that they are satisfied to allow the other fellows to do the work, with the natural result that no special benefits are derived by anyone. To these delinquents I would impress the fact that no worthy advancement can come to the varied building industries without their sincere collective efforts. There is no use in deceiving ourselves with the idea that we do not need a co-operative organization, or that the unethical contractor and price-cutting tradesman cannot be eliminated.

All of this can be accomplished by a small amount of co-operation among the trades, and the longer the effort is deferred the greater the chaos.

We would accomplish nothing in the great world's war were we to send our soldiers and sailors abroad and permit them to act upon their own initiative. Financial demoralization would occur if our banking institutions were not thoroughly organized and the laws governing them strictly observed.

In fact, a casual analysis of successful operations will indicate that back of the effort of these individuals and institutions is a well-placed, well-guarded organization, based upon the principle of co-operation that may at a very short notice concentrate its forces upon the object to be attained.

Do not be deceived into thinking that rules, by-laws, codes of ethics, or joining an organization will give you the result you expect without any further effort on your part. Attend the meetings of your craft regularly and abide by its rulings loyally, and see that the other fellow does likewise. Put some of your time and effort into the work and you may look for results, but not until then.

Let the contractor organize his craft to control the unethical ones and to restrict the material supply houses in their sales to this outlaw. Let the material supply houses organize to hold the contractors' craft to a strict accounting on the other hand, and, working in harmony with each other, will make the unethical, price-cutting, irresponsible outlaw a thing very hard to find.

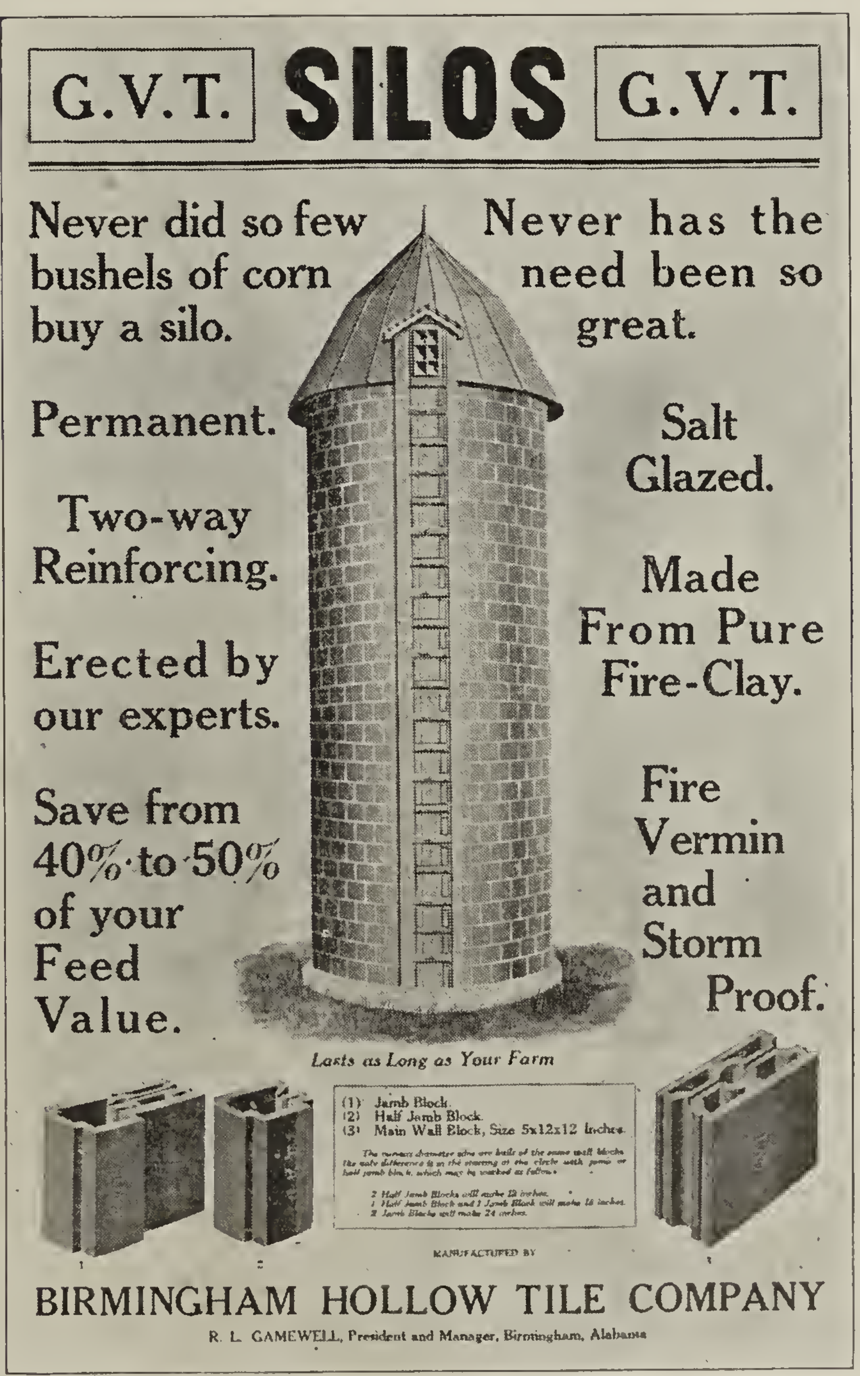
It can be done. It has been done before. It is being done elsewhere at the present time, and there is no reasonable sane excuse why it should not be done in this community, and now.—*Walter R. Simons, president and general manager of the Simons Brick Co., in the monthly bulletin of the Building Industries' Association, Los Angeles, Cal.*

* * *

Pushing Clay Tile Silos in the South

R. L. Gamewell, president and manager of the Birmingham (Ala.) Hollow Tile Co., is one man in the South who thoroly believes in teaching the public what he knows about the lasting qualities of vitrified tile for use in silo construction.

The accompanying illustration is an example of the effective advertising literature being distributed by the Birmingham Hollow Tile Co. On the reverse side of this folder, which measures 25 x 16 inches and is sent thru the mails under one cent postage, is printed some valuable detail information regarding silo construction and the cost of a vitrified tile silo, as well as several illustrations of silos constructed of Gamewell vitrified tile.



G.V.T. **SILOS** G.V.T.

Never did so few bushels of corn buy a silo.

Never has the need been so great.

Permanent.

Two-way Reinforcing.

Erected by our experts.

Save from 40% to 50% of your Feed Value.

Salt Glazed.

Made From Pure Fire-Clay.

Fire Vermin and Storm Proof.

Lasts as Long as Your Farm

(1) Jamb Block.
(2) Half Jamb Block.
(3) Main Wall Block, Size 5x12x12 Inches.

MANUFACTURED BY

BIRMINGHAM HOLLOW TILE COMPANY

R. L. GAMEWELL, President and Manager, Birmingham, Alabama

OPPORTUNITY KNOCKS

With Most Remarkable Clay Resources at Hand, Both Rail and Water Transportation Available and a Great Market at the Door, Possibilities Are Tremendous for Success in the Manufacture of Other Clay Products As Well As Common Brick in the Hudson Valley by the Use of Modern Machinery

By Robert W. Jones

THE DISCUSSION opened in *Brick and Clay Record* of December 4, 1917, under the editorial "The Survival of the Fittest" and followed by the letter of Christopher Steadman, in the issue of December 18, 1917, has brought to my attention many facts, which I believe will be of interest, in regard to the production of brick in the Hudson river region.

In these days efficiency is the great object of the active producer, with efficiency standing for the production of a perfect article, for the use intended, at a minimum rate per unit.

CLAY PRODUCTS IN HUDSON RIVER REGION

The story of the burned clay production of this region extends back into the extreme early days of our colonial history and had its beginning under the methods as practiced in Holland. It is apparent to all who have closely followed the prevailing conditions of the industry, in this section, that in general very little advance has been made. Of course, we have steam and electric power, yet the horse machine has not entirely been abandoned in New York State and we are not much further ahead, in the actual production of brick, than in the days of the first automatic brick machine.

MANUFACTURERS SLOW TO CHANGE METHODS

Many excuses have been given for the condition in which the industry now finds itself. There is no doubt but that the labor conditions have been responsible to a considerable extent and another cause is the natural local characteristic of having a great reluctance towards making any change in methods. The industry is now laboring under the same conditions which is affecting the agricultural industry and which formerly affected the ice industry. Labor is uncertain, the individual operators are usually working on a small scale with insufficient capital and the small resulting profits are apparently satisfactory. When these conditions are removed by a system of continuous operation and the production of more than one grade of material, then the Hudson Valley will come back to its proper place in the burned clay industry. It is not so much the selling price that the producer should worry about at present, but he should make some attempt to widen his market, lower his costs and prove to the builder that brick is the cheapest and best of all building materials. This will never be possible unless there is a decided change in the present methods of mining, tempering, forming, drying, burning and selling.

REMARKABLE CLAY RESOURCES

The clay resources of the state are immense and have never been brought properly to the attention of the producer or to those who might desire to enter the field. Of course, the greater amount of the available clay is of glacial origin deposited in brakish waters and is, therefore, chiefly of use in the production of the rougher forms of building materials. I do not believe, however, that the general conditions can be duplicated as they are found in the Hudson Valley. We have a body of clay of almost continuous extent for over one hundred and twenty-five miles, with a thickness in places of over one hundred and fifty feet, a width up to two miles, a great market at our door with rail and water transportation available and yet every year shows more abandoned yards. Perhaps a few figures in regard to our condition will show the facts more plainly, taking the figures from 1904 to 1915 inclusive which are the only ones available, at this time, which show the production and not the sales.

In 1904 the common brick production of the Hudson Valley exclusive of the New Jersey yards and of Saratoga County in New York, had a value of $7,234,876. In 1915 the same region made a production valued at $4,886,734. For the same years the other clay building products, of this region, had a value of $962,439 and $864,822 respectively. In 1904 the average wholesale selling price for common brick was $5.67. In 1915 the price varied from $6.00 to $6.25 in January to $7.00 in November with a minimum for the year of $5.75. This is thru a range of twelve years. If these figures show the true conditions, where is the industry going to land? Taking other years for comparison does not help matters as the largest production was made in 1905 when, with a selling price of $6.50, the entire production had a value of $9,751,753. The production of other material than common brick is negligible, there being only three plants operating with a production of common-hollow, hollow blocks, drain tile and face brick.

COMMON BRICK PRODUCTION

Taking other statistics it will be found that there were 127 plants available for the production of common brick with only 85 in operation during the season of 1915. In 1904 there were 110 plants making a production. Now taking for comparison the production figures of a small isolated area where rail transportation only is available but where new ideas have been freely used and backed by system and capital. There was in this particular section at one time twelve machines producing and in 1904 made a production of about 58,000,000 with a value of approximately $285,000. In 1915 four machines were producing under conditions which represented a great advance over 1904 and these four machines made practically the same output that was made by twelve under former conditions.

KNOWLEDGE OF CLAYS

To make any great improvement in the industry of the Hudson Valley it will be necessary to start at the beginning. I can safely make the statement that only an extremely small percentage of the producers know what their clay will produce or have any knowledge concerning the chemical or physical characteristics of the clay.

Unfortunately, about fifteen years ago the statement was made that the auger machine was apparently not suited for the conditions as found in the Hudson Valley. Since that time I have no knowledge of any attempt being made to thoroly investigate conditions as to the truth of this. An attempt was made to produce a dry-pressed brick. The material burned to a fine smooth red color but the plant was unfortunately operated with material which carried calcium sulphate in great abundance. This is the only place in the valley where such conditions can be found and yet it is held up as a warning for the entire section.

One plant was constructed to use an almost non-plastic shale in the auger machine and this is held up to the other producers as showing what would become of their plant if they should ever make a change. I do not say that every clay in the valley can be used in the auger or dry-press machine but there are clays which will turn out a fine grade of common-hollow, hollow blocks, drain tile and even a good grade of face brick. We have one producer in the Hudson Valley who has experimented to the extent of producing common soft-mud brick, common hollow, hollow blocks, drain tile and face brick, burning them in the ordinary form of scove kiln with considerable success. His market was limited but by producing these other articles he has increased this market for his common and he has a promising industry in his new products.

* * *

Hollow Tile Office Moved To Washington

Feeling that all of the organization's efforts should be directed toward the handling of the war work now in hand, the directors of the Hollow Building Tile Association have decided to close the Chicago office on the fourteenth floor of the Conway Bldg., and move same to Washington, D. C., where headquarters will be maintained at 631 Pennsylvania avenue, N. W. E. R. Sturtevant, secretary of the Association and manager of the new hollow tile bureau which has been organized to take care of government orders for building tile, left Chicago Monday, April 29 for Washington where he will remain indefinitely.

Reports indicate that the work of the hollow tile bureau is progressing very nicely and that prospects are good for a large tonnage during 1918.

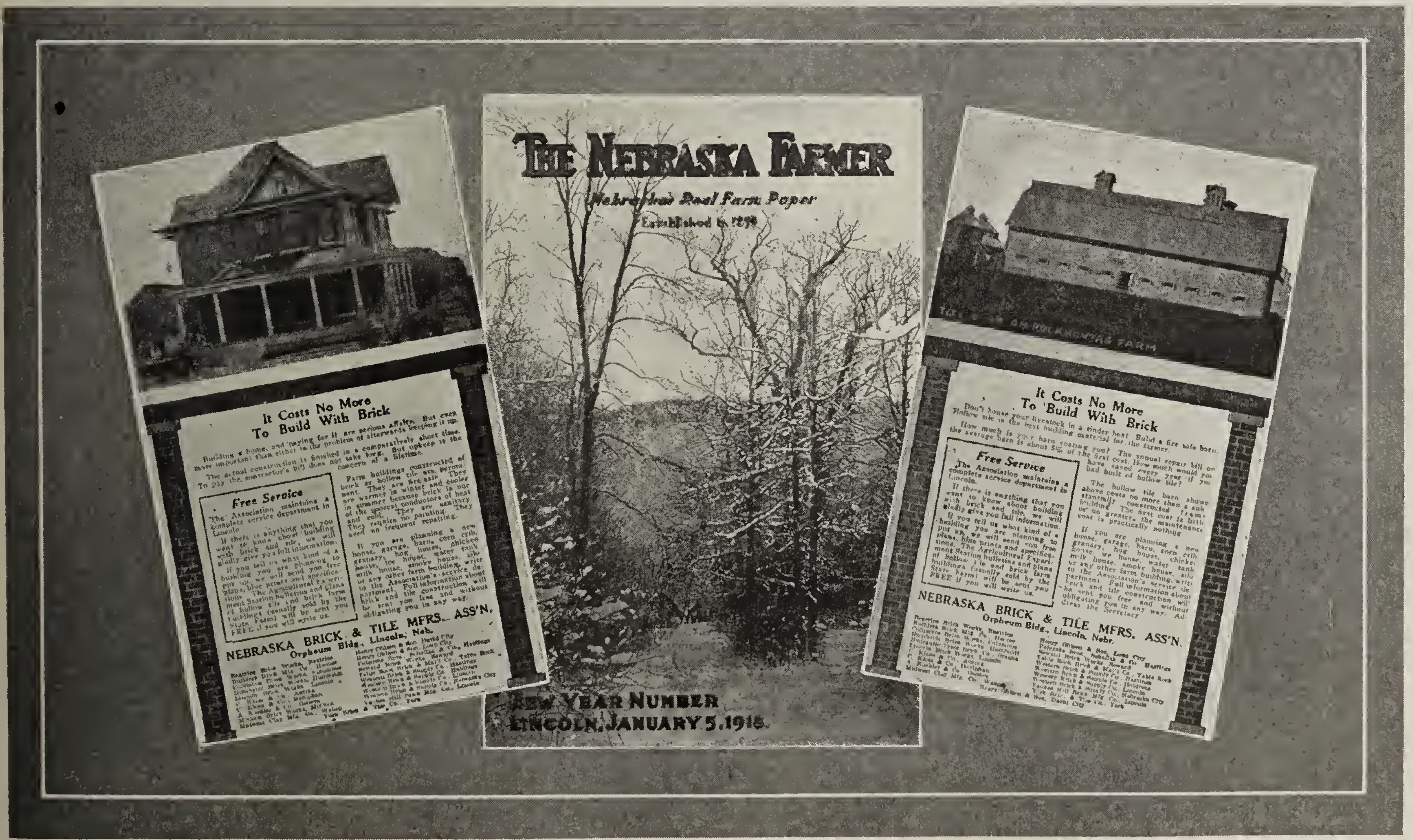
* * *

PROFITABLE FARM PAPER ADVERTISING

ALTHO it is one of the smallest clay products associations, the Nebraska Brick and Tile Association is carrying on one of the most extensive advertising programs ever undertaken by a similar body.

In inaugurating its advertising campaign, the advertising committee of the association decided that the most promising market for clay products lay in the state's agricultural and rural districts since the present prosperity of the farmer places him in a position to make improvements which would have caused him to hesitate a few years ago.

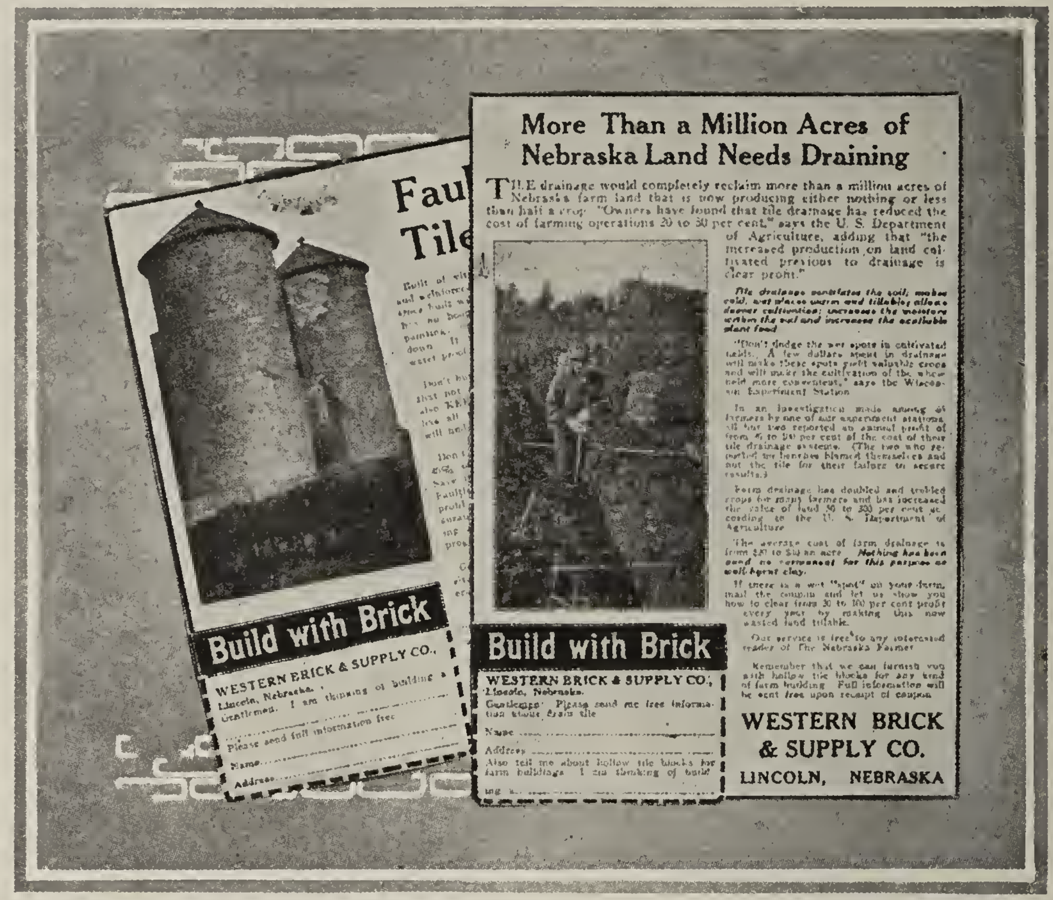
Proceeding upon this basis, the farm paper has been selected as the medium thru which to reach the desired field.


It Costs No More To Build With Brick
Free Service
NEBRASKA BRICK & TILE MFRS. ASS'N.
Orpheum Bldg., Lincoln, Neb.
THE NEBRASKA FARMER
Nebraska's Real Farm Paper
NEW YEAR NUMBER
LINCOLN, JANUARY 5, 1918.
It Costs No More To Build With Brick
Free Service
NEBRASKA BRICK & TILE MFRS. ASS'N.
Orpheum Bldg., Lincoln, Nebr.

A Fair Sample of the Advertising Which Is Being Carried in "The Nebraska Farmer" by Clay Products Manufacturers in an Effort to Educate the Farmer to the Use of Everlasting Clay Materials.

The keynote of the association advertising being done in the farm papers is that its mission is to educate the farmer to the use of permanent building materials, getting the information to him, insofar as possible, without cost. Complete sets of blue prints have been prepared which are used to answer the inquiries received about all types of farm buildings.

The illustration shows two quarter-page advertisements which have appeared in "The Nebraska Farmer." The "ad" sets forth the advantages of using clay products in all farm building construction and tells of the free service in regard to plans, costs, blue prints, etc., offered by the association. A cut illustrating the different modern farm buildings constructed of clay products and a list of manufacturers who are members of the association are also included in the advertisement.



More Than a Million Acres of Nebraska Land Needs Draining

TILE drainage would completely reclaim more than a million acres of Nebraska farm land that is now producing either nothing or less than half a crop. "Owners have found that tile drainage has reduced the cost of farming operations 20 to 50 per cent," says the U. S. Department of Agriculture, adding that "the increased production on land cultivated previous to drainage is clear profit."

Build with Brick

WESTERN BRICK & SUPPLY CO.,
Lincoln, Nebraska.
Gentlemen: Please send me free information about drain tile
Name
Address
Also tell me about hollow tile blocks for farm buildings. I am thinking of building

WESTERN BRICK
& SUPPLY CO.
LINCOLN, NEBRASKA

The Western Brick & Supply Co. of Lincoln, Neb., Has Been Doing Some Advertising in Farm Papers on Its Own Account

One of the members of the above mentioned association, the Western Brick & Supply Co., of Lincoln, Neb., is carrying on a little advertising campaign of its own in the same paper. Its advertisments are written in an attractive form and occupy quarter-page space.

The clay products industry is just beginning to wake up to the possibilities of this form of advertising. There is no doubt but that in the near future more extensive publicity campaigns will be carried on. Better get in from the start Mr. Clay Manufacturer, and be in a position to reap the harvest right "off the bat."

* * *

Net Earnings of National Fire Proofing Co.

One of the most gratifying statements that the National Fire Proofing Co., of Pittsburgh, Pa., has issued in several years was revealed this month in the 1917 report mailed to stockholders. The earnings for the year totaled $301,000, or over 20 per cent. on the present market value of the preferred stock. The surplus account was increased $140,000 after making all deductions, that item now standing $992,046 as against $852,639 the previous year. The year 1917 was probably the worst one in the history of the building industry. Many authorities, among them the "Wall Street Journal," predict that at the close of the war there will be great impetus given to the building industry and if this is correct, it is asserted that the National Fire Proofing Co. should profit by it.

The company's total net earnings for 1917 were nearly $400,000 as compared to 1916 which showed a deficit. Of last year's profits, $259,406 was represented in earnings from operation and $42,458 profit from sale of property. The company spent $391,705 in maintenance which was charged to manufacturing cost. Bonds to the amount of $189,000 were retired, leaving the amounts now outstanding $1,774,000 as against $1,963,000, the previous year. Inventories totaled $1,200,705 as against $900,536 the previous year, while current liabilities totaled $1,062,943 as against $965,994 in 1916, with the present reserve for depreciation standing at $1,169,473 as against $1,027,015 the previous year. Current assets total $3,210,873 as against $2,698,835 in 1916. Current liabilities amount to $1,062,943 as against $965,994 the previous year. In other words the current assets increased $412,038 and the current liabilities $96,949. The directors charged off $142,458 for depreciation and created a reserve of $20,000 for doubtful accounts, leaving the net profit of $140,000 to be applied to surplus.

In his statement to the stockholders President W. D. Henry says in part: "Conditions at the beginning of the year indicated a period of unusual activity in the building line, but late revents, with which we are all familiar, changed this situation, and many of the large building projects were either held in abeyance or abandoned entirely, with the result that the manufactured product of your company was 67,286 tons less than during the preceding year. Notwithstanding the installation of many labor saving devices, the number of tons produced per man during 1917 was practically the same as for 1916, which clearly indicates that the labor efficiency was materially reduced. Every economy, consistent with the maintenance of the standard of your organization, obtained during the year. Twenty-one wells have been drilled on the property at Haydenville, Ohio, eleven of which are producing Pennsylvania crude oil and one producing gas. Oil produced during 1917 totaled 13,974 barrels and gas produced totaled 47,003,448 cubic feet.

"The earnings of the American Clay Products Co., and the National Fire Proofing Co., of Canada, Limited, in which your company is a stockholder, amounted to $32,058.35 and $4,161.41, respectively, after deducting taxes and interest charges. These earnings were not considered in the financial statement of your company."

* * *

The plants of the Trimble Paving Brick Co. at Glouster and Trimble, Ohio, will be sold by the receiver, William H. Crume, at public auction on Friday, May 31, at 2 o'clock at the Old Court House, in Dayton, Ohio.

* * *

At Bristol, Va., which is on the Tennessee line, and adjoining the town of Bristol, Tenn., Joe A. Caldwell and Wm. Eberhardt have leased a brick plant, which will be improved. The new operators have announced that additional machinery will be installed, increasing the daily output to 50,000 brick.

HOW ABOUT *the* DEMAND *for* AMERICAN CLAY PRODUCTS *in* EUROPE *after the* WAR?

This Question is Answered in the Following Article Written by a Belgium Refugee Whose Clay Plant Was Destroyed by The Boche in the Early Days of the War

By Armand De Gallaix

I HAVE BEEN ASKED if the American ceramic plants, manufacturing clay products for the building trades, will have an opportunity to do business in the European countries, especially in Belgium, when the war is over.

As a veteran manufacturer in the Belgian ceramic industry, I well know the situation in the Belgian building trade, so therefore, am prepared to give the following particulars.

Everybody knows the disastrous situation in which Belgium has been placed by the German invasion. What remains of the formerly beautiful and prosperous Belgium is a mere memory. In a large part of the country, private and public buildings, churches, railroads (except those of military value), bridges, ceramic, metallurgic or other manufacturing plants have either been destroyed or the machinery has been removed to Germany. When a German retreat is made no one dares predict what will remain of the country.

BIG OPPORTUNITY IN READJUSTMENT PERIOD

A very long time will elapse after Belgium soil is again free before industry and the trade will be normal. The period of reconstruction and readjustment will be of several years duration, and meanwhile the American manufacturers will be able to obtain a ready and advantageous sale for their products.

The demand for many ceramic products will be enormous, and the United States will have an opportunity to do a large business. The Belgian anxious to rebuild, will address his requirements to the manufacturers who are able to make immediate shipment. France and England will be weakened after the war, and will be short of ceramic laborers, therefore, will be unable to meet the demands of the Belgian trade at the proper time.

I am now going to pass in review the different clay products which, after the war, will be the most favored in the Belgian trade.

WHAT IS MOST NEEDED

Luxurious products have little chance to be employed and it is only a question of clay products of ordinary current trade, sealed by quantities.

Only face brick of high grade can be exported from America. Common brick will be made in the open air in Belgium or may be shipped from Holland. The colors generally used in face brick are white, cream, red, yellow and leather, but new kinds can be successfully introduced. These brick must be of a high quality, unalterable and perforated with small square holes in each side of the thickness. These brick are not repressed. They come direct from the pug mill thru the draw plate and are wire-cut with sharp edges. The Belgian contractors do not use plain pressed face brick because plain brick requires too much mortar; besides, the cost of shipping perforated brick is much less because of their lightness. The perforated face brick permits the slipping of cement into the holes of the superposed brick, thus forming a very strong masonry (bound masonry) in some cases.

Enamel brick are used in the public buildings such as railroad stations, post office and telegraph stations, markets, slaughter houses, hospitals, baths, barracks, subways, bridges, etc.

PAVING BRICK

There is not much chance of exporting paving brick to Belgium because of the heavy traffic everywhere in the country. The roads are generally paved with square or oblong stone of blue stone, porphyry or granite. Attempts were made before the war to use paving brick as sidewalks for cycles along the roads on the Belgian sea coast. Altho this can be recommended for streets in quiet localities, for yards and stables, this process of paving has not yet received favorable consideration.

Roofing tile are in the same classification in Belgium as are common brick, and should not be considered there.

TERRA COTTA TO REPLACE NATURAL STONE

Terra cotta, glazed and unglazed, is rarely employed according to American methods in Belgium, on account of the numerous quarries of natural stones and marble existing in that country, and of the white stone coming from France which has, until now, had the marked favor of the Belgian architects. However, perhaps as excited a Belgium as I, who has been shown the wonderful and artistic use of glazed terra cotta in American plants, could incite the Belgian architects to follow the American plan which permits of the creation of so many wonderful pieces of architecture. Belgium can be made an active working place in this connection for big buildings.

WALL AND FLOOR TILE

Wall and floor tile are extensively used in Belgium, especially in private homes, hotels, restaurants, shops and stores.

White enamel wall tile in sizes, 6x3, 3x3 with a 6x3 decorated fringe, brown caps and plinth will be asked for by thousands and thousands, and I consider this brick as one of the best to be exported on account of its facility of shipment, its general use and its reasonable price.

Floor tile, such as encaustic tile, is used in Belgium more largely than in the United States. In nearly every home encaustic floor tile 6x6 and other sizes, forming numerous beautiful designs of various colors, may be seen. White enamel and encaustic floor tile are in the same family and are used in every new home and restaurant. For home comforts they are used in the kitchen, bathroom, lavatory, toilet, lobby and hall.

MOSAIC TILE

Mosaic tile is not so largely used in Belgium as in the United States on account of the high price existing before the war. I believe that there is a good opportunity to introduce this kind of tile in the rich private homes, in offices, banks and stores with much success. If a reasonable price could be made a strong demand would result.

But as far as floor tile is concerned, I have not as yet encountered in the United States the kind of floor tile most commonly used in Belgium. I mean a vitrified plain floor tile which is used in cheaply flooring many rooms and buildings, such as large halls in the railroad stations, schools, garages, yards, promenades and sidewalks. If an American manufacturer would start a plant to produce this brick he would be absolutely sure to have a good business in Belgium and later in the United States.

I would also attract the attention of the American manufacturer of sanitary wares to the possible export of white closets, sinks, etc.

FIRE CLAY PRODUCTS

In finishing this review I will speak of the great demand in Belgium for fire clay products of which an enormous quantity are required, especially in the steel and iron works, glass and gas works. Fire brick of all kinds and quality, steel graphite crucibles, glass receptacles, gas retorts and special refractory pieces for glass furnaces are required. When you consider the number of plants in operation before the war in the countries of Mons, La Lonoiere, Charleroi, Namer and Liege, there is no doubt as to the extraordinary market for the export of American fire clay products.

Moreover, it is certain that after the war, the barrier of custom for the American nation will be wrecked, and special and fast lines of shipping from America to Europe will be created, so that the freight rate will be low enough to make the products accessible to every one.

If for no other reason, the Belgians will turn their business to American firms because of their heartfelt gratitude, and sympathetic business relations should exist in the future.

* * *

Highway Industries Association

Announcement comes from the Washington office of the Highway Industries Association that H. G. Shirley of Baltimore has been elected secretary of the Association. For six years Mr. Shirley has been chief engineer of the Maryland State Road Commission, and for eight years previous was Engineer for Baltimore County.

Mr. Shirley's appointment is looked upon with great favor by all who have known him in either a professional or business way. When the American Association of State Highway Officials was formed several years ago, Mr. Shirley was elected their first president. When the Highways Transport Committee was formed as a part of the Council of National Defense, Mr. Shirley was named as the member representing the State Highway Officials.

The Highway Industries Association represents the combined highway industries of the United States, employing more than one million wage earners and over two billion of dollars in invested capital.

The officers of the Association are: President, S. M. Williams, general sales manager of the Garfield Motor Truck Co., Lima, Ohio: first vice-president, A. R. Hirst, State Highway Engineer, Madison, Wis.; second vice-president, E. J. Mehren, vice-president of the McGraw Hill Co., New York City; third vice-president, S. T. Henry, vice-president Allied Construction Machinery Corporation, Washington, D. C.; secretary, H. G. Shirley, formerly State Highway Engineer of Maryland.

The Directors are A. N. Johnson, Chicago, Ill., chief engineer of the Portland Cement Association; W. P. Blair, Cleveland, Ohio, secertary National Paving Brick Manufacturers' Association; A. P. Sandles, Columbus, Ohio, former secretary of the National Crushed Stone Association; H. J. Love, Cleveland, Ohio, secretary of the National Slag Association; E. Guy Sutton, Williamsport, Ind., secretary of the National Association Sand and Gravel Producers; E. J. Morrison, New York City, president of the National Association Asphalt Block Manufacturers; S. F. Beatty, vice-president of the Austin-Western Road Machinery Co., Chicago, Ill., representing the National Association of Road Machinery Manufacturers; W. O. Tutherford, general sales manager the B. F. Goodrich Co., Akron, Ohio, and vice-president Motor and Accessory Manufacturers; W. E. Metzger, president of the Detroit Automobile Club, representing the Motor Car Division of the National Automobile Chamber of Commerce; W. T. White, president of the White Co., Cleveland, Ohio, and chairman of the Motor Truck Division National Automobile Chamber of Commerce.

The aims and objects of the Highway Industries Association are: To assist in co-ordinating the highways with the other transportation agencies of the country; to encourage the development of highways that will advance the economic life of the nation; stimulate their use in such a manner as to facilitate and cheapen the transportation of food, raw materials and finished products, and to co-operate with Government agencies, both State and National to the end that our highways may be of maximum service in the transportation system of the country.

President Williams states that a recent canvass of the business men of the United States shows practically a unanimous belief that highway improvement is an economic and war necessity and that construction should proceed if the highways are to meet the traffic requirements of the country. He urges immediate attention to the maintenance of those highways already improved, otherwise the money already invested will be lost as the highways in many localities are going to pieces on account of the enormous increase of traffic and the fact that many of the highways were not originally built to withstand the present traffic demands.

A BUY-WAY *to* GOOD WILL

The Income Tax Continues to Puzzle Baldwin, Who Just After Deciding Where He is "At" Receives a Treasury Decision Which Repeals All He Knows

By G. W. Greenwood

Secretary, United Fire Brick Company, Uniontown, Pa.

BALDWIN MADE a hasty grab for his papers and anchored them down with various paper weights as the door opened and a gust of wind shot across the desk from the open window opposite.

"Hello, you look a bit more airy than when I last saw you at the Brixton Inn the day of the storm," greeted Danneman, the attorney, whose arrival had caused the disarray of the little stacks of papers on the flat-topped glass-covered desk.

"I guess yes," he admitted. "I would hardly have been caught sitting in my shirt sleeves by an open window that day. Do you know, we were unable to reach the Ardent plant by phone for two weeks after that blow. Now, my wife and I have been putting in evenings poring over catalogs of seeds and shrubbery. We are doing a little amateur landscape gardening for the benefit of our plantation. We have been getting stacks of fun deciding what to buy and where to plant it. What colors the flowers will be, how high they grow and how far they spread."

"Are you an optimist?' asked Danneman, with a broad smile.

"That depends on what you mean by an optimist," was Baldwin's cautious response.

"An optimist," explained Danneman, "is an amateur gardener who believes he can raise vegetables as fine as those shown on the packages of the seeds he purchases. But speaking of the advent of Spring, your chief was telling me recently of his little boy, who had been feeding a flock of red birds all winter, with wartime rations, and now he has been keeping track of some bluebirds which have appeared on the scene. He hopes they will build near his home."

INCOME TAX A PUZZLE

"We are anxiously looking for the return of a pair of Baltimore orioles whose nest of twine hung near our bungalow last summer," said Baldwin, nodding to a seat on the opposite side of the desk. "But how is the income tax treating you now? Still having fun with the dodgers? You remember you were treating me to some figures on invested capital in lieu of lunch on the day of the storm while we waited in the lobby of the Brixton Inn."

"No, I don't remember," said Danneman. "I am trying to forget it. I am thinking of the man who applied in our court for admission to the bar. All he knew was the state statutes. The examining board told him there was nothing to prevent the next legislature from repealing all the law he knew! Just about the time one gets to know where he is 'at,' along comes a treasury decision which repeals all he knows. As a result of a recent decision concerning invested capital, the law seems to me to be unrecognizable. According to the law, the more one invested and the less he borrowed, the less the amount of his excess profits taxes. According to the treasury decision, number 41, as I interpret it, the less one invests and the more he borrows, the less his excess profits tax; that is, in case his profits are at a greater rate than the rate of interest he is paying. For instance, suppose a corporation sells twenty thousand dollars' worth of stock at par, borrows eighty thousand at 6 per cent., invests the one hundred thousand and makes 15 per cent. on the entire sum invested. That corporation will be better off, so far as the excess profits taxes are concerned, than if it had sold thirty thousand dollars' worth of stock and had borrowed seventy thousand dollars."

"And what if he borrows all his capital and invests nothing?" asked Baldwin, smiling to himself at the fancied adroitness of his query.

HARD PRESSED FOR CASH

"If he could swing the deal entirely on borrowed money, and if the laws of the state permitted that form of incorporation, he would be still better off, so far as the excess profits are concerned," replied Danneman, by no means abashed. "But what do you think of the claim the Hard Pressed Brick Co. is putting in for Good Will?"

"Good Will!" exclaimed Baldwin; "I always thought good will was based in some manner on the profits covering a more or less definite period, whereas until very recently they have resembled their own product."

"How so?" asked Danneman, somewhat mystified. "Do you mean that they have been crooked?"

"No, I guess their product has been straight enough, and their dealings too, but they have been hard pressed for cash."

"I am afraid there is more truth than poetry in that," assented Danneman. "But they have another phase of good will in mind, one not built on sales. Now ordinarily, the sales department is a big factor in building up that elusive element known as Good Will. Of course, just now, you probably have more orders than you can take care of anyway, and high grade salesmanship isn't needed."

REAL SERVICE IN GREAT DEMAND

"Not needed!" exclaimed Baldwin, indignantly."An effective sales department is needed now more than ever. An up-to-date concern sells not merely its product, but its services. And right now services of a high order are more sorely needed than at any other period in my career. We need representatives who can investigate the needs of the customer and suggest a suitable substitute in case he cannot secure what he has been accustomed to. Often a substitute will suit the requirements better, only the purchaser has had no previous incentive to make the experiment. And on the other hand, looking at the question from a more selfish standpoint, the sales department needs people who know by past experience what it is to struggle for business, and who are far-sighted enough to realize that the same struggle will come again. And there is no telling how soon it will come, either. People are needed in our department who will take the present opportunity to make connections which will remain when times again become dull. We want to make customers whose trade we most value, to become as eager to buy from US in the future as they are to buy from anybody at the present time. We want customers who will go out of their way later on so as to buy from us, and who will give the cold shoulder to those manufacturers who are indifferent to their needs now. This is the salesman's opportunity."

"And in distributing your available supply, are you taking advantage of the opportunity to even up old scores" inquired Danneman.

"GETTING EVEN" DOESN'T PAY

"No," declared Baldwin. "If one of our representatives were to take as a personal affront a real or fancied discourtesy of some purchasing agent in the past, and were now to start in to get even, he would be putting himself on the same plane with the object of his animosity; and what is still more to the point, he would be using our company as a cat's paw in paying his own personal grudges. No, the policy of a salesman is to foster the good will of the house. An uncalled-for discourtesy once on the part of one of our own mis-representatives lost for us the trade of a firm and we did not get it back for years. In fact, we would never have gotten it back if the concern had not changed hands, resulting in the installation of a new purchasing agent who did not have it in for us. The fact that the man who made the break had long since departed from us did not make any difference to the man he had tactlessly offended."

"Doesn't that rather contradict your position that you should not take affronts as personal?" objected Danneman.

"What I meant to explain was, that our firm should not act on that principle, and we should not aim to get back at other firms because they have not conducted their purchasing in the past according to our ideas. Our ideas may be wrong. But nevertheless, there are purchasing agents who make the business of their respective companies less valuable than it might be. On the other hand, one cannot deny to firms the advantages they secure by having good men in their purchasing departments."

"Now consider a case like this," he continued, encouraged by Danneman's evident interest, extending his long shirt-sleeved arms across the desk—all his shirts had to be made to order so that the sleeves would be long enough— "Here is a company which always bought but little from us, but when any one of our representatives went to see them, they were always ready to see him. Some responsible member of the purchasing department always met him personally, made him feel that he had done them a favor by calling, and never sent out word by an office boy that they were too busy to be bothered with him. And the result? Why, the representatives continued to call. When things began to hum, they began to buy from us. Eventually, our people got to calling them by phone and telling them of any surplus we happened to have in addition to orders already booked, so that they are among the first to get a whack at it. A lady once said, in referring to some trying experience, that when she got thru she was so prostrated she was almost an individual. Our men felt far from prostrated, but certainly after visits to that office they felt like individuals."

"And does it work the other way, too?" asked Danneman. "How about those purchasing agents who a few years ago were making it anything but pleasant for those who had to call on them?"

"Well, in one case a purchasing agent used to keep men waiting in his ante-room for hours at a stretch, and at the close of the day they would depart, returning when the office opened the following morning to await the pleasure of the man who favored them with occasional orders. How he fares now I do not know. We have never had exactly such an experience ourselves. In another case of which I was told, the glass door of the inner office was ajar so that it was possible to see as in a mirror a reflection of the interior. There sat the purchasing agent, his feet up on the desk, reading a magazine devoted to light literature. Yet he sent out word that he was entirely too busy to be seen, and asked that the salesman come back the following day."

"And what happened the day following?"

RECIPROCITY IN BUSINESS

"The salesman did not return. Very possibly he wasn't missed anyway, but I'll venture if he went now he wouldn't be kept waiting. Here is still another incident: I met a man coming from the offices of a large concern in this city, wearing a smile which surely indicated he had received a large and profitable order. But he hadn't. He had been declining one. He told me that the concern had offered him a substantial bonus for prompt shipment of a car of material, but he had orders already booked for his entire output. He confided to me that by loading light the cars for which he had orders, he could have squeezed out a car or two, but that this particular concern had treated him so all-fired mean in the past, and had ground him down to such low figures, he was delighted at being able to state truthfully that he was sold up."

"I am afraid that is human nature, fast enough," concurred Danneman. "And I'm thinking I know to whom you are referring. I feel somewhat like the dusky elevator man you have in this building. When he heard them speaking of the nave of the church, he said, 'he was sure he knew whom they had in mind,' jerking his thumb over his shoulder. But what process do you employ in disposing of your available supply of brick?"

Entirely unconscious of his being adroitly cross-examined, Baldwin promptly started in to explain his methods.

"There are some consumers who have purchased their entire requirements in the refractory line from us for I don't know how many years. These have a claim upon us that we could not ignore, even were we so inclined. If a firm buys from us when it has a choice of buying from any fire brick manufacturer, we must reciprocate by selling to them in preference to supplying those who have ignored us in times past."

"In other words," suggested Danneman, "you are thankful for favors already received instead of for favors to come."

Rising and getting ready to depart, he continued. "Well, that is the way Righter has been handling affairs for the Hard Pressed aggregation. You say now is the time to plan for the later period, which must inevitably come, when business will be scarce. They did just the same, but from the standpoint of a purchaser instead of from a selling outlook. A few years ago a raft of salesmen were importuning them for every order he had to place. He decided the time was sure to come when conditions would be reversed, and that he would be importuning salesmen in order to secure supplies. And he planned accordingly. You are congratulating yourself on

(Continued on page 890)

ELECTRICITY *for* CLAY PLANTS

The Special Power Requirements of Clay Products Manufacturers and the Application of Motors to Meet These Needs Are Discussed Herein

By Kenneth C. Berney

Paper Read Before the Canadian National Clay Products Association

SOME YEARS AGO it was the general custom to drive machinery in clay plants by means of steam engines. Some of the smaller plants were operated by horse power. Now a large number of the plants, both large and small, in localities where electricity is available, are operated by electric motors.

In some plants electrical operation begins with the digging of the clay, and is used in every operation, including hauling the shale, dumping the cars, grinding, conveying, mixing, forming the product, and conveying the finished product.

We will now discuss briefly the advantages of electric motor drive over steam engine or drive from a central plant.

In contemplation of the layout of a brick, tile or pottery plant the first point of consideration is the location. Railroad facilities, water, coal and location of raw material are very important factors. The use of electricity, especially when supplied by central stations, simplifies the problem since the water and coal questions become of secondary importance.

FLEXIBILITY OF ELECTRIC DRIVE

With electric drive the various departments of the plant can be located and arranged to the best advantage for operating without the limitation of arrangements imposed by central engine drive with the accompanying belt connections to the various departments.

With central steam engine drive there must be used long line shafts and belts. If it is desired to operate only one machine or department in the plant, all of this shafting and belting must be run, which means a large friction load. In such cases this power lost in friction may equal or exceed that used in doing useful work. Not only is the cost of such waste power a big item, but the wear on the belts, shafts and bearings is considerable. Where there is fine clay dust in the air this wear is very great. The dust collects on the belts and pulleys and works into the ganger bearings, causing belt slippage, which means decreased output; the belt must be run very tight. With individual motor drive made economically possible by using electric motors, energy is required only when useful work is being done. The control of any one machine is conveniently at the hand of the operator, and the machine can be started and stopped at will. There is no cost for power after the machine is shut down, as would occur were long lines of belting and shafting used.

In plants where there is excessive clay dust in the air electric motors can be direct connected or geared to the driven machines, doing away with belt trouble entirely.

GREATER ASSURANCE OF CONTINUOUS OPERATION

When the various machines or departments are operated by means of individual motors there is a greater assurance of continuous operation as compared with central engine drive, in which case engine trouble means the shut-down of the whole plant. Motors maintain a practically constant speed thruout their operating range, which results in increased production over the plant driven by a single steam engine where the speed varies not only with the boiler pressure, but also with the variation in load.

Electric motors can be placed wherever convenient, on the ceiling, on a side wall, on the floor, or right on the machine to be driven, and the machines can be located to best serve the logical sequence of operations. The flexibility of a motor system is also of the greatest advantage, since frequent changes in the positions of the machines and additions to the equipment are often necessary. When motors are used they can be shifted with ease. All that is necessary is to run feeders to the new location. New machines can be added to any part of the plant without fear of overloading the engine, as in the case of central engine drive.

Due to the fact that motors can be applied at the closest position to the driven machines, belts, gears, etc., are reduced to a minimum. The absence of many shafts, belts and pulleys means that the plant will be lighter and cleaner, allowing more and better work to be done.

Fuses or circuit-breakers are installed in the motor circuit as a protection against heavy overloads, such as might occur if a machine became clogged with clay. In such a case, the current is cut off from the motor, and it stops, preventing any damage to it or the driven machine. The possibility of a shut down due to a machine breaking is thus reduced to a minimum.

Clayworking machines can be driven by either direct current or alternating current motors. If a plant generates its own power or is right near the central station, direct current may be used for its operation. Due to the fact that direct current cannot be transmitted long distances economically, and alternating current can, practically the only current supplied today by central stations to power users is alternating current.

TWO MAIN TYPES OF MOTORS

So we will deal with the alternating current motor as it is used almost exclusively for industrial drive. There are two main types of polyphase alternating current motors used for manufacturing purposes—the synchronous motor and the induction motor. The synchronous motor is often used to drive machines requiring, say, 200 horse power or more where the starting conditions are light, where the starting current is not objectionable and where only one speed of operation is desired. If overloaded more than about fifty per cent., or the voltage at the motor terminals is allowed to drop more than about ten per cent., a synchronous motor will stop.

The induction motor is used to drive such machines as required in clay plants, so we can confine our remarks to this type of motor.

The induction motor consists essentially of a stationary part, at either end of which is a bracket supporting a bearing. The shaft which rotates in these bearings has mounted on it a rotating member. The clearance between the rotating and stationary parts is small, being less than one-sixteenth inch in a fifty horse power motor. There is no electrical connection between rotating and stationary parts, and there are few parts to get out of repair. The induction motor is the most rugged type of electric motor made.

There are two main types of polyphase induction motors—that having a squirrel cage rotor and that having a wound rotor. They are commonly called the squirrel cage motor and the wound rotor or slip-ring motor. The rotor, as the name implies, is the revolving part. The stator, or stationary part, is practically the same in both types of motor.

SQUIRREL-CAGE MOTOR GENERALLY PREFERABLE

The squirrel cage rotor derives its name from the fact that its winding resembles in appearance the rotating wheel found in a squirrel's cage. The winding consists of two heavy copper or alloy rings, which are held in place by bars, usually made of copper, which span the space between the rings at regular intervals. The ends of these bars may be riveted, bolted, or welded to the two rings. The rotor of a wound rotor motor has on it a winding similar to the stationary part, consisting of many turns of insulated copper wire. The leads from the different phases of the winding are brought out to three collector rings, on which slide the carbon brushes which carry the rotor current to the external resistance which is used with this type of motor. The collector rings are often called slip rings, from which comes the name slip-ring motor. The squirrel cage rotor is more rugged than the wound rotor, and there are less parts to get out of order. The squirrel cage rotor is practically indestructible on motors of the latest type where the rotor bars are welded to the two rings, which are called resistance rings. A squirrel cage motor is considerably cheaper to buy than a wound rotor motor. So, everything considered, the squirrel cage motor should be chosen rather than the wound rotor or slip-ring motor, except in a few applications where the latter is practically suitable.

Where it is desired to have a motor operate at a number of different speeds the wound rotor motor is used. It is very often used where the torque required to start a load is very great. This is particularly true where the power plant supplying the current is of limited capacity, as less current will be drawn from the line at start than were a squirrel cage motor used. The wound rotor motor in a clay plant is sometimes used to drive the dry pans, pug mills, and auger machines. When squirrel cage motors are used with these machines motors with large starting torque should be applied, unless there is a clutch between the motors and the machines. Wound rotor motors should not be used where there is stone dust in the air unless the collector rings are closed in, as such dust, getting between the brushes and rings, rapidly wears the collector rings. Squirrel cage motors can be supplied suitable for driving all the machines used in clay plants.

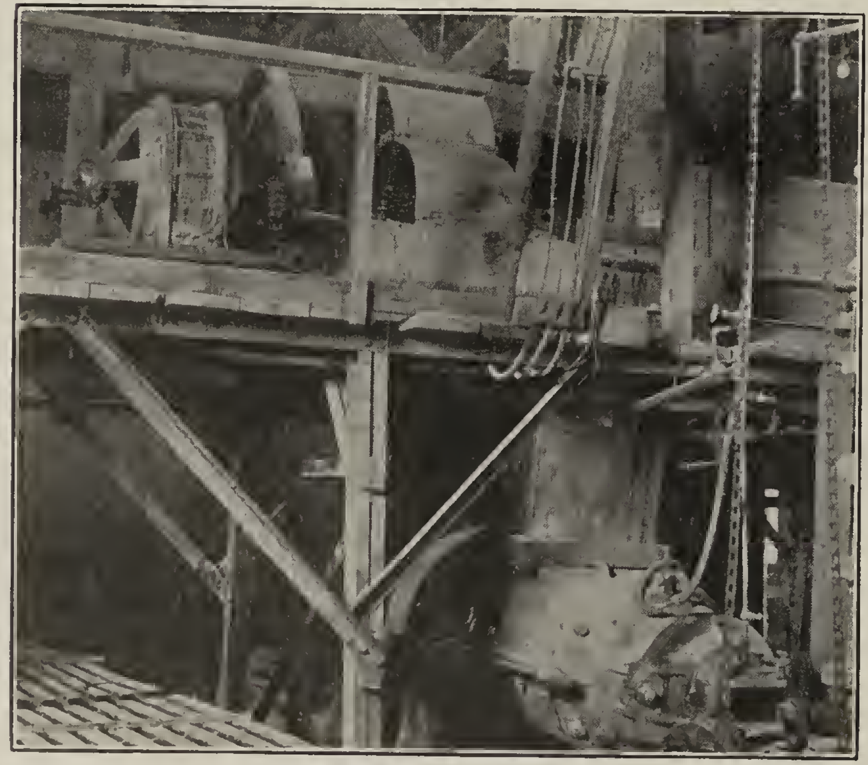
CHARACTERISTICS OF INDUCTION MOTORS

A few of the characteristics of an induction motor which may be of interest are as follows:

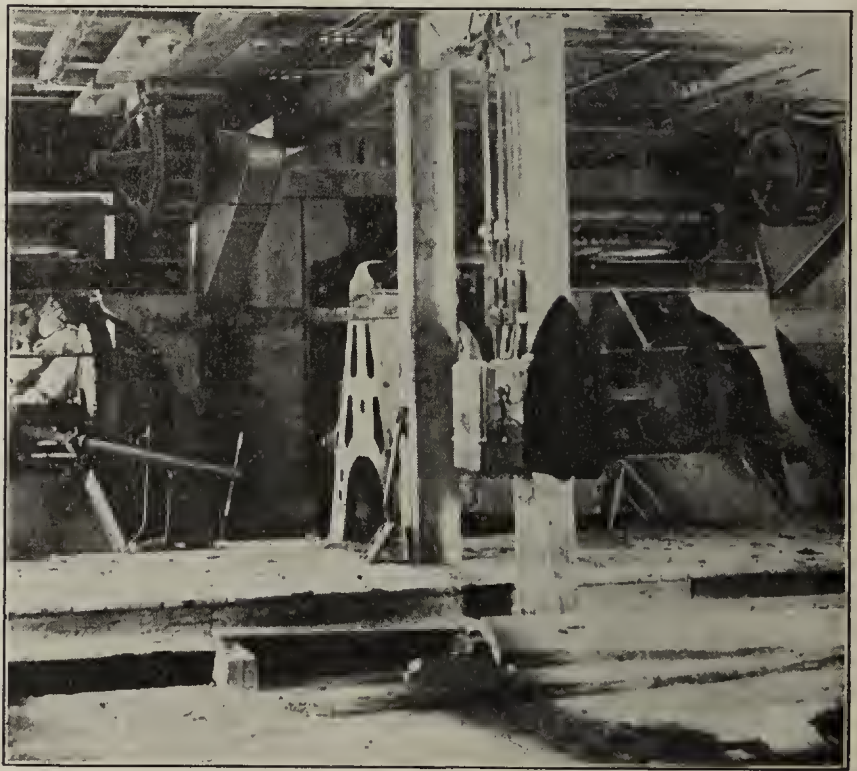
1. It will carry a load for short periods of two to two and a half times full load without injuring the motor and without the motor stopping.
2. The speed of the motor will be practically constant from approximately fifty per cent. load to fifty per cent. overload.
3. The motor will start a load where the starting torque required is considerably greater than the running torque. The motor can be designed with a starting torque up to two and a half times the running torque where desired for heavy starting service.
4. The current taken by the motor when starting will be approximately two to five times that required when running. It depends on the load to be started.
5. If the voltage at the motor terminals drops below normal the starting torque will decrease as the square of the terminal voltage divided by the normal voltage.

In applying electric motors to clay machinery the following severe conditions must be kept in mind:

1. Severe starting requirements, due to the inertia of the driven machinery and to material in the machinery hardening when at rest.
2. Severe overloads, due to irregular feed of material.



35 H. P. 3 Phase 600 Volt 720 R. P. M. Motor Direct Connected to Pug Mill, Puritan Brick Co.'s Plant, Hamden, Ohio.



Induction Motors Driving Dry Pans, on the Plant of the Didier-March Company, Keasbey, N. J.

3. Dusty atmosphere about plants and presence of dampness, causing collected dust on the motors to become cemented to the windings and interfering with ventilation.

220 Volt Motor Direct Connected to Crusher in Use by the Boone (Iowa) Brick, Tile & Paving Co.

4. The use of gears of large pitch and high pitch line speeds, resulting in severe vibrations.

Good service is obtained with these conditions only when careful consideration is given to the application to each individual machine. The motors in clay plants should have generous starting and running characteristics, the bearings made dust-proof, and the windings impregnated to withstand moisture. The motors should be carefully aligned with the driven machines. The feeders to the motors should be of ample size to carry the current, bearing in mind that motors which drive machines hard to start will draw much heavier currents than those driving machines easy to start. If the feeders are too small the terminal voltage will be lowered, with consequent decrease in starting torque.

To provide for the severe starting and running conditions there has been a tendency to select motors larger than necessary. The result of the low load factor caused thereby is low power factor and low efficiency of the individual motors. On account of low efficiency the cost of electric power will be greater. This cost will still be increased if there is a penalty for low power factor. The best plan is to consult the manufacturer who can supply a motor just large enough to do the required work, and with large starting torque where such is required. In case of machines hard to start, a standard squirrel motor can be used in combination with a friction clutch and the motor started without load. Friction clutches, however, are subject to wear, and should be avoided wherever possible.

Consideration must be given as to whether group or individual drive of machinery would be better. For plants with storage facilities between the various departments and the machinery scattered individual drive will usually be better, while for plants with all machinery interdependent and grouped, group drive will be better.

The following are usual drives employed for the more common machinery found in clay plants:

1. The conveyor from the storage bin is usually belted from the motor driving the crusher or dry pan.

2. Crushers are usually belted to the motors. Motors with good starting and pull-out torques are required with all kinds of crushing machinery.

3. Dry pans are usually driven by motors geared to the dry pan shafts. The vibrations of these machines are severe, and the motor shafts should be supported by outboard bearings. An improved arrangement is to have flexible couplings between the gearing and the motors, as this prevents the transmission of vibrations to the motors to a large extent.

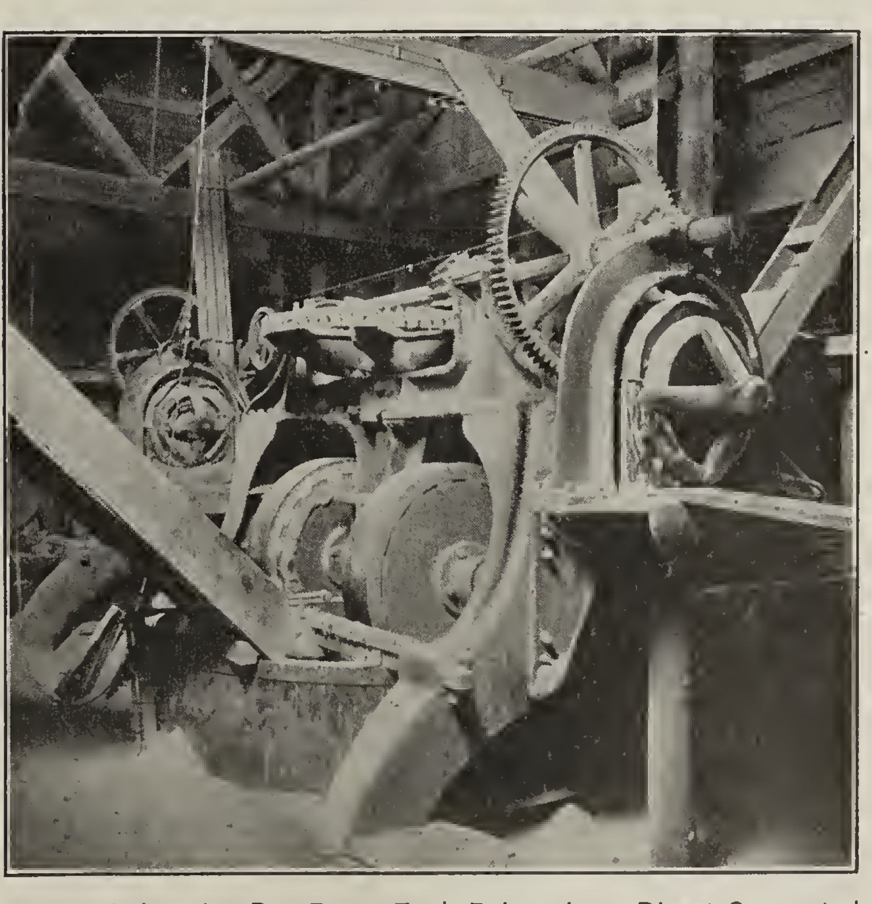
4. The pug mill and auger machines may be driven by motors, either belted or geared to them. Because of the large pitch of the gears of these machines considerable vibration results, and flexible couplings should be used if the motors are geared. These machines are sometimes stopped full of material, which hardens if the shut-down is of an appreciable length, and, if clutches are not provided, the starting requirements of the motors are severe. For such installations wound rotor motors are advisable.

5. The cutters, represses, elevators and conveyors between the various machines require little power, and may be driven from the motors driving the machines upon whose operation they are dependent, or individually by small motors.

We will now briefly outline the motor drive in various kinds of modern clay plants. First, we will touch on the most common of all—the brick plant.

BRICK PLANTS

There are three common forms of brick plants, depending on what kind of machinery is used to form the



Two of the Five Dry Pans, Each Driven by a Direct Connected 8-35 H. P. 900 R. P. M. 550 Volt Motor, in Use by the Puritan Brick Co., Hamden, Ohio.

brick. There are the "stiff mud," the "soft mud," and the "dry mud" machines.

In case the raw material used is shale or rock, crushers or dry pans are usually used, while for soft and stiff mud, refining rolls or various kinds of pulverizers are used.

First, we will take a plant with a capacity of approximately 60,000 building brick, an eight-hour day. Both common and face brick are made from hard shale. This plant is the type where stiff mud machines are used, forcing the clay thru dies by an auger machine into a continuous bar, which is cut into brick by parallel wires or by an automatic cutter. In this plant the air is drawn from the kilns containing the burned brick during the cooling period and passed thru drying tunnels containing the green brick, drying the same. When it is desired to move the dried brick the hot air is shut off and the air in the tunnels is cooled by an exhaust fan. Squirrel-cage motors, two-phase, 220 volts, 60 cycle, are employed for the entire operation of the plant. The total motor capacity is 215 h.p. and the maximum demand is 130 h.p.:—

One 40 h.p.; 850 r.p.m. Drive—Geared to and belted. Application—9 ft. dry pan. From extension shaft of dry pan to 40 ft. bucket conveyor.

One 40 h.p.; 850 r.p.m. Drive—Geared to and belted. Application—9 ft. dry pan. From extension shaft of dry pan to 40 ft. bucket conveyor and a 50 ft. x 24 in. belt conveyor.

One 40 h.p.; 850 r.p.m. Drive—Geared. Application—To an American No. 51 pug mill.

One 75 h.p.; 690 r.p.m. Drive—Geared and belted. Application—To No. 1 giant brick auger. From countershaft of brick auger to 30 ft. shaft, which drives an 18-brick automatic cutter, three belt conveyors, a bucket conveyor and a repress.

One 15 h.p.; 1,120 r.p.m. Drive—Belted. Application—Thru countershaft to 140 in. blower; speed, 216 r.p.m., supplying draft for dryer.

TYPICAL DRIVE IN COMMON BRICK PLANT

Next we will take the motor drive used in a plant making common brick from soft clay which requires no screening or grinding. The daily output is 40,000 brick. Soft mud machines, consisting of an upright receptacle with curved arms at the bottom to force the clay into press box molds, are used. The molds are fed automatically under a press, after being filled, and are moved forward to delivery tables.

Here one 60 h.p., 690 r.p.m., induction motor is used. It is belted by means of main shaft and countershaft to one combination pug mill and brick press, capacity 120 brick per minute; one mold sander and one waste clay elevator to lift waste clay from brick machine to pug mill. The brick are air dried, and cord wood is used to fire the kilns.

Lastly, we will consider the motor drive in a plant manufacturing pressed brick from a hard shale where the dry press process is used. In this plant there are two separate and distinct units, each unit being driven by a 50 h.p. squirrel-cage motor. Each 50 h.p. motor is belted to a 9 ft. dry pan and a brick press, as well as the necessary conveyors, cup elevators, etc. The moisture is added to the material in the dry pan, and the material is fairly dry when pressed. The kilns of this plant are fired with cord wood. Each unit is capable of turning out approximately 23,000 brick an eight-hour day. When a large output is required both units can be run, giving an output of 46,000 brick a day. Under this arrangement the plant is always run at high efficiency, and one unit is in reserve in case of any breakdown in the other unit.

A plant manufacturing ordinary drainage tile will have the same motor equipment as a brick plant. In fact, tile is often made in a brick plant by simply changing the dies on the auger machine so that the clay will be forced out in the form of a tube, which is cut into the required lengths.

SEWER PIPE PLANTS

In a certain sewer pipe plant there is in use, or will be shortly, a total of approximately 235 h.p. in squirrel-cage induction motors. The raw material used is a weathered shale, which is brought to the plant by railroad. The shale is conveyed from the receiving platform and elevated to the storage room by means of two 5 h.p. motors, one operating the conveyor and one the elevator. The shale is first fed into a dry pan, which, along with the conveying belt and elevating cups, is driven by a 75 h.p. motor, belted to the load. From the dry pan the material is carried to the wet pans, three in number, where it is uniformly mixed. It is then conveyed by belts and elevators to the presses, where it is pressed into molds, making the different size of sewer pipe, one length at a time. Special shapes of pipe are hand molded. The three wet pans and the conveyor belts are belt driven by a 150 h.p. motor.

POTTERY AND ORNAMENTAL TILE PLANTS

Here the nature of the work is such that individual motor drive offers many advantages. The use of belts and line shafting in factories of this type is especially disadvantageous on account of the fine clay powder which fills the air and collects on belts and pulleys, producing excessive belt slippage and large friction losses. The output of the plant is, in many cases, limited on account of the belt slippages. The use of individual motor drive will, in such cases, increase the output of the factory without any other increase in factory equipment, extra floor space, or labor.

In pottery and tile plants the charge, consisting of flint, feldspar and clay, is thoroly mixed with water in a "blunger" mill. The "slip" is then sifted to remove lumps into an "agitator." Then the slip is pumped into a slip press, where the greater part of the water is pressed out. The wet clay, which is uniform in composition and free from lumps, is taken from the slip press. Up to this point the method of manufacturing pottery and ornamental tile is the same. For pottery the wet clay is pressed thru a pug mill to distribute the moisture evenly and is then molded into finished shape on "jigger" machines. For tile the wet clay is dried in racks and then passed thru a crusher. After this it is ground into a fine powder in the dust mills. The fine, dry powder is then molded into forms by presses, after which it is ready for the initial firing. The firing of the ware is practically the same in both cases. After initial firing the ware is decorated, refired, and glazed. Pottery is dipped entirely into the glaze and the tile is glazed on one side only. The ware is again fired, which completes its manufacture.

Some of the motor drives used in an ornamental tile and pottery plant are as follows. Sixty cycle squirrel-cage motors are used:

Ten h.p.; 1,120 r.p.m. Drive—Geared. Application—Two double blungers.

Three h.p.; 1,120 r.p.m. Drive—Geared. Application—Sifters.

Three h.p.; 850 r.p.m. Drive—Geared. Application—Agitators.

Five h.p.; 1,120 r.p.m. Drive—Geared. Application—Slip pumps.

Twenty h.p.; 1,120 r.p.m. Drive—Direct connected. Application—Dust mill.

Seven and one-half h.p.; 850 r.p.m. Drive—Geared. Application—Pug mill.

Fifteen h.p.; 690 r.p.m. Drive—Belted. Application—To several glaze machines.

An electric motor is also geared to a grog pan, which crushes the broken saggars.

PORCELAIN INSULATOR PLANTS

Porcelain insulators which are made from kaolin, clay, and quartz, are manufactured much the same as pottery. The wet clay may be molded in metal dies or on jiggers for "petticoat" insulators, or forced thru a tube machine in the shape of tubes or cylinders for tubes and bushings. The molded pieces are thoroly dried, then dipped in a glaze, which has been made the desired color, and again dried. This glaze has the same coefficient of expansion as the porcelain, and has no constituents to deteriorate. The insulators are fired in kilns, which are raised to a very high temperature for a few hours and then allowed to cool down slowly. Porcelain insulators must not only stand high voltages in many cases, but at times heavy mechanical strains.

In a certain electrical porcelain insulator works located in this part of the country there is a good example of individual motor drive. The principal machines are driven by nineteen squirrel-cage motors, with a total capacity of 84 horse power. The motors are belted to the driven machines.

Blunger and agitators	1-10	h. p. motor
Pug Mill	1-10	" "
Large centre machine	1-15	" "
Small centre machine	1- 7½	" "
Clay lathes	1- 2	" "
Jiggers	2- 1	" "
Finishing machines	6- ½	" "
Grinding machines	1- 2	" "
Glaze mill	1- 7	" "
Grog pan	1- 7½	" "
Air compressor	1- 8	" "
Water pump	1- 5	" "
Machine shop line shafting	1- 5	" "
	19-84	h. p. motor.

The kilns in this plant are fired with coal.

The above gives an idea of the electric motor drive used in various kinds of clay plants.

One of the points of consideration in changing over from steam to electric drive is the method of drying the product. In those plants where heat exhausted from the kilns is used for drying or where drying tunnels are heated directly by coal or gas no change is necessary. However, when exhaust steam is used it will probably be of advantage to consider some other method of drying in order to eliminate the use of boilers for this purpose only. Electric power for brick plants can usually be purchased from the central stations at a very attractive figure, due to the fact that the plant is usually shut down in cold weather. This means that the power requirements occur mainly in summer, when the central station load is otherwise at its lowest point. The point may be raised that the first cost of a number of electric motors in a large plant is greater than the cost of one steam engine. If you add to the cost of the steam engine the cost of the extra belting, shafting, etc., required, you will find that the first cost of the two methods of drive is approximately the same. When once installed, the individual motor drive will effect a considerable saving over the central engine drive, both as regards cost of manufacturing and cost of plant maintenance.

* * *

Ohio Highways Plan Assumes Definite Shape

Definite steps toward organizing the comprehensive motor truck highways plan in Northern Ohio and adjacent territory were taken in Cleveland recently. Both trucking and highway interests, as well as material concerns, were considering the proposition. Just how the situation looms up now was stated by Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, Cleveland. He said:

"The cities which fail to secure highways of the order and class demanded today are bound to recede and go into the class of 'has been.' This is a new epoch. In short, the cities which will grow have to prepare themselves for transportation facilities coming from development of highways. The city of the future is built around high class brick highways usable every day of the year. When our country was in the period of its early development those cities which were liberal and energetic, and attracted the railways to these cities on their right of way or as termini, are the cities which are in the foreground today. Those which were backward, or either discouraged railroads or were indifferent to them, are the cities which are behind the times now.

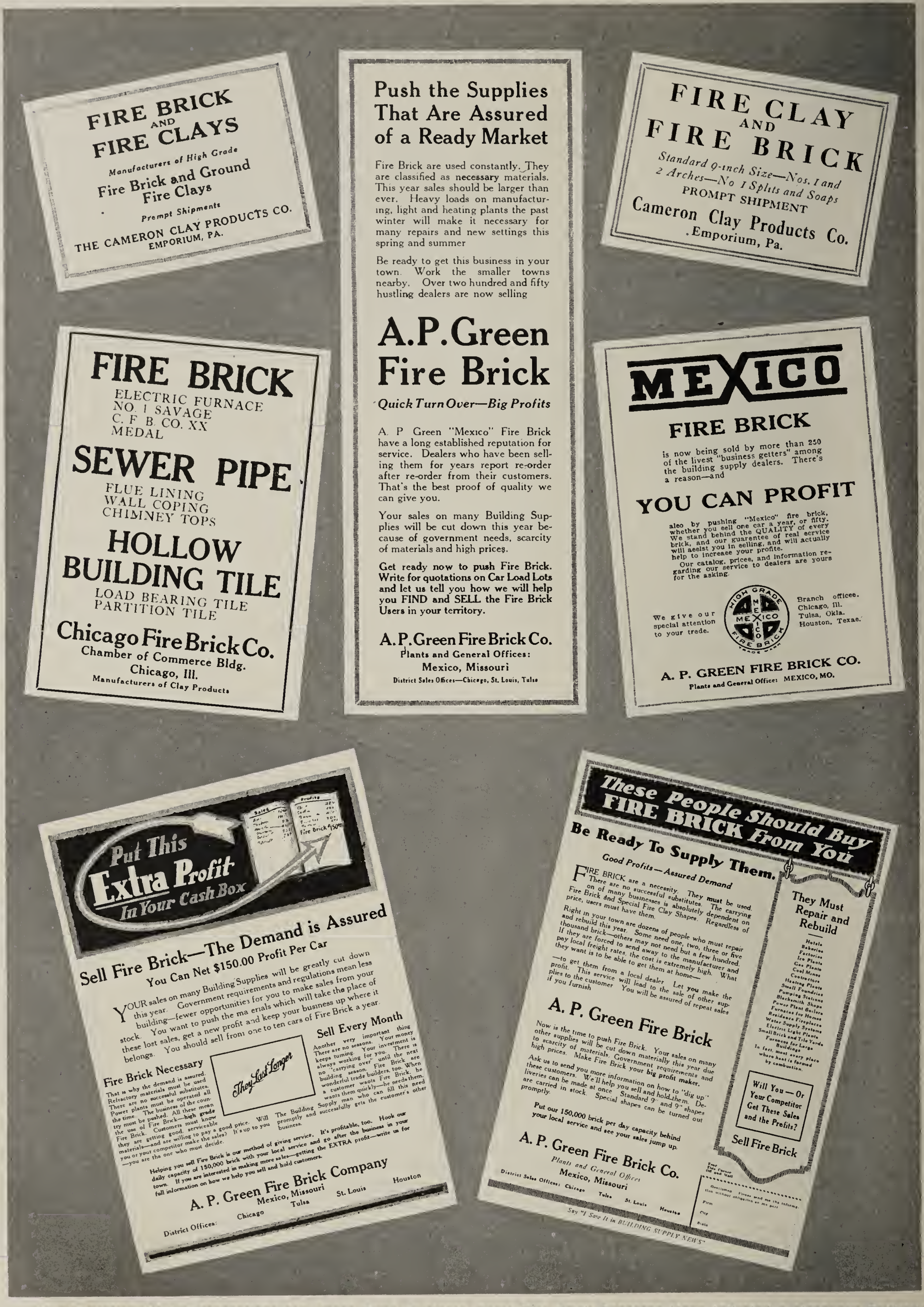
"Now is the time when highways, rather than the railroads, are capable of developing the cities. As the Terre Haute 'Tribune' says: 'The city or county that will be foremost in the new world of motor travel, advantages considered—and Terra Haute has them—will be the city that is foremost in building brick highways.' There are many cities in the country, coming to the notice of the Association that see the handwriting on the wall."

These observations of Mr. Blair were made in connection with the plans of the Cleveland Commercial Dealers' Association, which held its initial meeting to further the establishment of return load bureaus in every city in Northeastern Ohio, with a view toward enabling motor trucks to operate efficiently and profitably.

The move is the result of figures received here from the National Council of Defense, which has prepared a survey, showing approximately 500,000 trucks in operation in the entire country. It is claimed that so far 70 per cent. of trucks in one locality run empty one way. Thus it is pointed out that if this ratio were carried out thruout the country 350,000 trucks would be idle.

Members of the National Paving Brick Manufacturers' Association taking these figures as a basis for argument for better highways, point out the value of money expended for such road improvements. A summary of road improvements in Ohio for 1918 follows:

Roads under contract to be completed in 1918, 157 projects, 378.88 miles, $6,042,671 amount of contracts. Roads financed in all or part, contracted or to be contracted for in 1918, 118 projects, 537.69 miles, $11,547,727 amount of contracts. Maintenance of roads, funds in state treasury, motor vehicle fees, $2,100,000. County and township roads under contract to be completed in 1918, 138 projects, 384.85 miles, $4,001,927 amount of contracts. Roads financed in whole or in part, contracted for or to be contracted for in 1918, 126 projects, 342.61 miles, $5,479,439 amount of contracts. Maintenance of roads funds in country treasury from levies, $1,528,460. These figures are from records of various road authorities of the state, counties and townships in Ohio.



FIRE BRICK AND FIRE CLAYS

Manufacturers of High Grade

Fire Brick and Ground Fire Clays

Prompt Shipments

THE CAMERON CLAY PRODUCTS CO.
EMPORIUM, PA.

Push the Supplies That Are Assured of a Ready Market

Fire Brick are used constantly. They are classified as **necessary** materials. This year sales should be larger than ever. Heavy loads on manufacturing, light and heating plants the past winter will make it necessary for many repairs and new settings this spring and summer

Be ready to get this business in your town. Work the smaller towns nearby. Over two hundred and fifty hustling dealers are now selling

A.P.Green Fire Brick

Quick Turn Over—Big Profits

A. P. Green "Mexico" Fire Brick have a long established reputation for service. Dealers who have been selling them for years report re-order after re-order from their customers. That's the best proof of quality we can give you.

Your sales on many Building Supplies will be cut down this year because of government needs, scarcity of materials and high prices.

Get ready now to push Fire Brick. Write for quotations on Car Load Lots and let us tell you how we will help you FIND and SELL the Fire Brick Users in your territory.

A.P.Green Fire Brick Co.
Plants and General Offices:
Mexico, Missouri
District Sales Offices—Chicago, St. Louis, Tulsa

FIRE CLAY AND FIRE BRICK

Standard 9-inch Size—Nos. 1 and 2 Arches—No. 1 Splits and Soaps

PROMPT SHIPMENT

Cameron Clay Products Co.
Emporium, Pa.

FIRE BRICK

ELECTRIC FURNACE
NO. 1 SAVAGE
C. F. B. CO. XX
MEDAL

SEWER PIPE

FLUE LINING
WALL COPING
CHIMNEY TOPS

HOLLOW BUILDING TILE

LOAD BEARING TILE
PARTITION TILE

Chicago Fire Brick Co.
Chamber of Commerce Bldg.
Chicago, Ill.
Manufacturers of Clay Products

MEXICO

FIRE BRICK

is now being sold by more than 250 of the livest "business getters" among the building supply dealers. There's a reason—and

YOU CAN PROFIT

also by pushing "Mexico" fire brick, whether you sell one car a year, or fifty. We stand behind the QUALITY of every brick, and our guarentee of real service will assist you in selling, and will actually help to increase your profits.

Our catalog, prices, and information regarding our service to dealers are yours for the asking.

We give our special attention to your trade.

HIGH GRADE MEXICO FIRE BRICK TRADE MARK

Branch offices.
Chicago, Ill.
Tulsa, Okla.
Houston, Texas.

A. P. GREEN FIRE BRICK CO.
Plants and General Office: MEXICO, MO.

Put This Extra Profit In Your Cash Box

Sales | Profits | Fire Brick $150.00

Sell Fire Brick—The Demand is Assured

You Can Net $150.00 Profit Per Car

YOUR sales on many Building Supplies will be greatly cut down this year. Government requirements and regulations mean less building—fewer opportunities for you to make sales from your stock. You want to push the materials which will take the place of these lost sales, get a new profit and keep your business up where it belongs. You should sell from one to ten cars of Fire Brick a year.

Fire Brick Necessary

That is why the demand is assured. Refractory materials must be used. There are no successful substitutes. Power plants must be operated all the time. The business of the country must be pushed. All these mean the use of Fire Brick—**high grade** Fire Brick. Customers must know they are getting good, serviceable materials—and are willing to pay a good price. Will you or your competitor make the sales? It's up to you—you are the one who must decide.

They Last Longer

Sell Every Month

Another very important thing. There are no seasons. Your money keeps turning. Your investment is always working for you. There is no "carrying over" until the next building season. Fire Brick are wonderful trade builders, too. When a customer wants Fire Brick, he wants them quickly—he needs them. The Building Supply man who can fill this need promptly and successfully gets the customer's other business.

Helping you sell Fire Brick is our method of giving service. It's profitable, too. Hook our daily capacity of 150,000 brick with your local service and go after the business in your town. If you are interested in making more sales—getting the EXTRA profit—write us for full information on how we help you sell and hold customers.

A. P. Green Fire Brick Company
Mexico, Missouri
District Offices: Chicago Tulsa St. Louis Houston

These People Should Buy FIRE BRICK From You

Be Ready To Supply Them.

Good Profits—Assured Demand

FIRE BRICK are a necessity. They **must** be used. There are no successful substitutes. The carrying on of many businesses is absolutely dependent on Fire Brick and Special Fire Clay Shapes. Regardless of price, users must have them.

Right in your town are dozens of people who must repair and rebuild this year. Some need one, two, three or five thousand brick—others may not need but a few hundred. If they are forced to send away to the manufacturer and pay local freight rates, the cost is extremely high. What they want is to be able to get them at home—

—to get them from a local dealer. Let **you** make the profit. This service will lead to the sale of other supplies to the customer. You will be assured of repeat sales if you furnish

A. P. Green Fire Brick

Now is the time to push Fire Brick. Your sales on many other supplies will be cut down materially this year due to scarcity of materials, Government requirements and high prices. Make Fire Brick your **big profit maker.**

Ask us to send you more information on how to "dig up" these customers. We'll help you sell and hold them. Deliveries can be made at once. Standard 9" and 9" shapes are carried in stock. Special shapes can be turned out promptly.

Put our 150,000 brick per day capacity behind your local service and see your sales jump up.

A. P. Green Fire Brick Co.
Plants and General Offices
Mexico, Missouri
District Sales Offices: Chicago Tulsa St. Louis Houston

They Must Repair and Rebuild

Hotels
Bakeries
Factories
Ice Plants
Gas Plants
Coal Mines
Contractors
Heating Plants
Small Foundries
Pumping Stations
Blacksmith Shops
Power Plant Boilers
Furnaces for Homes
Residence Fireplaces
Water Supply Systems
Electric Light Plants
Small Brick and Tile Yards
Furnaces for Large Buildings
In fact, most every place where heat is formed by combustion.

Will You—Or Your Competitor Get These Sales and the Profits?

Sell Fire Brick

Tear This Corner Off and Mail

Gentlemen: Please send me the information without obligation on my part

Firm

City

State

Say "I Saw It in BUILDING SUPPLY NEWS"

In Connection With Preparations for Peace-Time Business Some Fire Brick Concerns Have Initiated a strenuous Publicity Campaign Directed Toward the Building Supply Dealer. Above Are Reproductions of Ads Which Have Appeared in "Building Supply News," an Exclusive Dealer Publication.

PREPARING *for* PEACE

Fire Brick Makers Show High Caliber Business Sagacity in Keeping Their Eye on the Future by Developing an Efficient Corps of Dealers—Advertise in Dealer Publication for Immediate and Future Business

PROGRESSIVE BUSINESS MEN are doing a great deal of thinking these days about what will come after the war. Merchants, manufacturers and bankers realize that, once war demands have let up, there is going to be a scramble for business. With keen foresight they are preparing themselves against the day when peace will be signed. They are taking great care to see that none of their good will and prestige is lost in directions where it has been well established. For instance, manufacturers who are selling their entire output to the government are still keeping in touch with their dealers and are addressing messages periodically to their peacetime customers.

FIRE BRICK MEN SHOW GOOD JUDGMENT

Fire brick manufacturers are showing high caliber business sagacity in keeping their eye on the future. They realize that the present heavy demand for fire brick and refractories is largely due to conditions brought about by the world war. They know that when the war is over effort will have to be put forth to get business that can now be had for the taking.

In connection with preparations for peace-time business—to say nothing of the present possibilities for disposing of considerable No. 2 brick—a few fire brick concerns have initiated a strenuous publicity campaign directed toward the building supply dealer. Reproductions of some of the advertisements which have appeared in *"Building Supply News,"* an exclusive dealer publication, are shown herewith.

The dealer has not always received the consideration that he deserves at the hands of the fire brick manufacturer. He is, however, coming more and more to be recognized as a factor in which there are great possibilities for developing a profitable demand for fire brick.

SELLING IS ON SCIENTIFIC BASIS

It is recognized that the sale of fire brick is becoming well established on an engineering basis. It is no longer a matter of handing out so many brick of a certain brand, but the salesman or dealer must know something about the use to which the material is to be put in order that the proper quality of brick may be sold. Fire brick manufacturers have come to the realization that unless the proper brick is used in the proper place and under conditions which the brick is designed to withstand, the brick is going to "fall down" and give the manufacturer, figuratively speaking, a "black eye."

Like any other class of business man, the dealer has his faults. There are good, bad and indifferent dealers. The bad or unprogressive dealer is bound to be eliminated by competition in the course of time; strong efforts are being made to wake up the indifferent dealer, while the progressive man offers a tremendous field for development to the clay products manufacturer.

SEARCH YOUR OWN HEART

You may have tried the dealer as a factor in your scheme of distribution and he has failed. If he has, it is either his fault or yours. If it was his fault and he demonstrated that he was not a logical factor in your scheme of distribution, then the best thing to do is to forget about him. However, it might be well for you as a fire brick or other clay products manufacturer to search your own self to see if you possibly were not to blame for the dealer's not proving to be an unqualified success. The dealer, on the whole, so far as a fire brick manufacturer is concerned, needs to be educated. If you want to develop him you have to put in some work in order to do a good job. He needs instruction and you ought to take the time to give it to him. This is a good way to prepare for peace.

However, what is more important at the present time is the fact that the dealer really offers an opportunity to develop some good business right now. He is on the ground, knows his territory, and is familiar with the prospective consumers of fire brick and ought to be in a position to know exactly what their requirements are. Besides being able to dispose of a considerable quantity of No. 1 fire clay, he should be able to market a good volume of No. 2's, which, in view of the present over-production, ought to interest fire brick manufacturers who want to turn their No. 2's into money.

WATCH FOR THIS

John D. Ramsay, president of the Elk Fire Brick Co., St. Marys, Pa., has written an excellent article on "The Middleman in Refractories," which will appear in the May 21 issue of *Brick and Clay Record.*

* * *

Colombian Markets for Machinery

Do you expect to sell construction materials or machinery to Colombia when the war is over? If you do, let us direct your attention to a report on that market by Special Agent W. W. Ewing, who has just finished a personal investigation on the ground.

In this report you will find a general introduction covering the industries, resources, means of communication, architecture and construction, etc., of the country, and chapters devoted to specific building activities, markets for particular lines of materials and machinery, and commercial practices and requirements—all the preliminary data you need to form an estimate of the possibilities of the field.

Mr. Ewing finds that Americans have a bigger business in Colombia now than when the war started and sees no insurmountable obstacles in the way of doing even better when peace is made.

Copies of the report can be obtained by sending fifteen cents (money order or coin) to the Superintendent of Documents, Washington, D. C., or to any of the District Offices of the Bureau of Foreign and Domestic Commerce, with the request for a copy of "Construction Materials and Machinery in Columbia," Special Agents Series No. 160.

PYROMETER MANUFACTURERS EMPHASIZE SERVICE

Four Companies in Excellent Letters Reproduced Herewith State Their Position on This Very Important Subject

NOT A LITTLE INTEREST has been created by the article which appeared in the April 23 issue entitled, "More Ware From Less Fuel by Means of a Pyrometer," written by an anonymous author (brick manufacturer). Comment which has come to hand concerning this article is very complimentary, and it is evident that it contained a real and authoritative message to the manufacturers of clay products.

There were two paragraphs in this article which might be construed to call into question the attitude of pyrometer manufacturers insofar as service is concerned. Feeling that it would be no more than right that the manufacturers of pyrometers should have an opportunity to say a word in defense, the Editor of *Brick and Clay Record* has requested them to submit replies to Mr. Anonymous' statements on this particular point. Four pyrometer manufacturers have responded with excellent letters which are reproduced below. We urge our readers to give these letters very careful study.

BUY SERVICE WITH PYROMETER

I have been very interested in reading the excellent article in your issue of April 23 entitled, "More Ware from Less Fuel by Means of Pyrometers," says Richard P. Brown, president the Brown Instrument Co., Philadelphia, Pa. I am particularly interested in the two paragraphs in which the writer calls attention to the importance of service first and pyrometers second, and that better results would be obtained if the pyrometer manufacturers realized this fact.

I wonder whether the writer of this article was aware that our company maintains five service men stationed at Philadelphia, Pittsburgh and Chicago, who do nothing but visit the plants using our pyrometers, and make adjustments to the instruments from time to time without any charge to the user.

These same service men, and they are known as service men by us, usually install the pyrometer equipment at every clay plant, and this insures the equipment being installed in the most satisfactory operating manner.

AGREES WITH "SERVICE FIRST" IDEA

I absolutely agree with the importance of service first, which the writer has pointed out in his article. It is costing us some $10,000 a year to maintain this service department. This expense is well justified thru satisfied users of Brown pyrometers, and altho the user may pay a few dollars more in the first place for their pyrometer equipment they get their share of the service afterwards; and I might state to the writer of this article that he might have suggested that a prospective pyrometer purchaser should buy his service with his pyrometers, just as he would buy insurance for a new building. He will pay a little more if he insures his buildnig but he is protected, and it is the far-sighted man who carries insurance just as the far-sighted man buys service with his pyrometers.

PYROMETER BUYER SHOULD BE ADVISED BY MANUFACTURER

I have read the article "More Ware From Less Fuel by Means of a Pyrometer," with a great deal of interest and appreciation, writes R. W. Newcomb of Charles Engelhard, New York, N. Y.

The author presented his facts in a convincing way. Unquestionably there is no department of a ceramic plant in which there is such a lack of efficiency as in the burning. Most clayworking plants have been very slow in taking up pyrometers. They are the losers. In a process where temperature control is everything, it does not require much of an argument to prove the need for instruments to measure those temperatures more accurately than can be judged by the skilled eyes of a head burner.

I believe that the principal reason for the fact that all progressive ceramic plants are not completely equipped with good pyrometers is due to two causes: one, that they have in years gone by—perhaps ten years ago—used an instrument called a pyrometer, and found it unsatisfactory. They have not taken the trouble since to investigate the improvements which have been made to make these very sensitive instruments practical for the severe conditions found in a clay plant.

THE PYROMETER TEN YEARS AGO

Ten years ago a "pyrometer" consisted of a very delicate instrument which used to be handled like eggs, a long porcelain and very fragile protecting tube in which were inserted the wires forming the thermocouple. Some of these old instruments are still in service, but their usefulness is limited. There have been more improvements in pyrometers to adapt them to clayworking plant requirements during the last five years than during the fifteen or twenty preceding years.

The second reason that all kilns are not equipped with pyrometers is because some owners have been influenced by cost more than anything else when they have selected and installed these instruments, putting in instruments which, in the severe temperatures of a brick kiln and under the rough conditions under which they must operate, could not possibly give satisfactory results. They may also have tried to over-economize when putting in the wiring system. The extra amount spent on high-grade equipment and proper installation is well invested, and assures results.

The most important sentence in the article is that "pyrometers will not fire a kiln; it takes brains." Pyrometers are only a very necessary tool with which close control of conditions is possible. To get results out of this tool it must not only be accurate and properly applied, but also properly used. This is up to the manager and his assistants.

BUYER SHOULD BE ADVISED BY MANUFACTURER

I cannot agree with the author of the article that good results can be obtained with any pyrometers, or that the buyer should not be advised by the pyrometer manufacturers.

The manufacture of pyrometers is a highly specialized industry. Instruments of different types and characteristics are available. Each different type undoubtedly has its good points for certain conditions, but on the other hand, there are other conditions under which that type which was most satisfactory for the first would be utterly useless; for example:

There are quite a number of different kinds of thermo-couples available; some of these thermo-couples are only suitable for the measurement of temperatures up to 300 or 400 degrees C.; others are only suitable up to 600 or 700 degrees C. It is very rarely that a base metal thermo-couple of any type is recommended for temperatures where accurate results are necessary above 800 or 900 degrees C.

Platinum thermo-elements can be obtained in various sizes, and the service that they will give is quite largely dependent upon their size, i. e., diameter of thermo-element wires. These may be used in temperatures up to 1,600 degrees C.

There are many different types of protecting tubes. A protecting tube which might give satisfactory service under certain conditions would be entirely useless under others.

It is therefor obvious that unless one has a knowledge of the proper type of thermo-element and the proper kind of protecting tubes to use, a thermo-couple constructed of an improper combination of these parts will not give satisfactory service. Under conditions as found in a brick plant, where frequent checking is not convenient, and where frequent renewals are a nuisance, it is advisable to select only those thermo-elements and the type of protecting tubes that will give the utmost in service.

There are many different types of indicating and recording instruments available, some of them specially designed for certain applications and entirely unsuitable for a different application. Therefore, to attempt to use a combination of instruments which is not suitable for the particular requirements as found in a clayworking plant is a waste of time.

PYROMETER DEALER'S REPUTATION AT STAKE

A pyrometer dealer has an intimate knowledge of the different types of thermo-elements, protecting tubes, instruments, etc., and knows from his experience the proper combination that will give the best service under different conditions. The manager of a clay plant will know that a pyrometer is to measure heat, and have a general knowledge of the principle of operation. Beyond this, however, his knowledge does not extend, generally speaking. The reputation of a pyrometer dealer is entirely dependent upon the service his instruments give. An argument, therefore, is not necessary as to why he should be consulted in the selection of equipment for any particular application.

It is frequently found that the trouble with a pyrometer installation in a brick plant is not in the installation itself, but oft times is due to the way it is installed, or a poorly installed wiring system.

It has come to my attention that in some cases where base metal thermo-couples have been installed in kilns where temperatures range above the temperature at which base metal thermo-couples will give accurate and good service, in order to reduce the severity of these conditions, instead of being mounted with an inside projection of four to six inches, so that they would actually indicate the inside temperature of the kiln, that they have been mounted barely flush with the inside of the kiln crown or wall. In such a position they are subjected to much lower temperatures than if inside of the kiln, and their indications are very largely affected by outside atmospheric conditions, which affect the factor of radiation. When a thermo-couple is so installed it cannot be expected that the same results can be obtained as when it is properly installed with the necessary inside projection.

The weather-proof features of a thermo-couple as used on a brick kiln out of doors are absolutely essential. Soot and dirt will collect on an ordinary open type terminal head, and this material, when moistened by rain water or dew, will form an electrical circuit, partially short circuiting the terminal head of the thermo-couple and resulting in an error which can in no way be estimated. Loose connections are another source of error.

All of these points are seldom appreciated by the superintendent of a brick plant, and, therefore, to say that the owner of a brick plant should not be guided by the recommendations of those who are familiar with the instruments, is advice contrary to the facts.

SHOULD NOT EXPECT SOMETHING FOR NOTHING

I have read the article you refer to, writes C. B. Thwing, president Thwing Instrument Co., Philadelphia, Pa., while calling on a customer and found it very interesting. I do not see that it calls for any rejoinder. It might perhaps be a little indefinite as to what the writer means by "Service." I fully understand, however, that when he speaks of service in the beginning he means the fullest possible information as to what form of thermo-couple is most suitable and where it could best be applied to his kilns and for his sort of ware. Information of this sort, growing out of the experience of the pyrometer manufacturer in the application of his instruments to other plants would, it seems to me, come definitely under the head of service.

As to the statement that the purchaser should insist that he wants service and then more service, it might be inferred that he thinks that the manufacturer who sells a pyrometer should, without cost beyond the initial price, visit his plant frequently and test and keep the instrument in repair. It seems to me that this sort of service should be paid for in accordance with its cost. It is, of course, absurd to expect that the customer will receive service for which he is unwilling to pay a reasonable price. Some instruments are much more delicate than others and require much more frequent attention. It is, of course, to the interest of the maker that the instruments should be kept in good working condition, and the customer who is willing to stand the expense of reasonable frequent inspection is a better customer than the one who puts the instruments in and neglects them.

The series of articles which you are now presenting seems to me to be more valuable than the series presented some time ago by a single author. This series gives the wider experience of a number of men, and anyone who will read the entire series carefully cannot fail to get a lot of valuable information. Moreover, those who are interested must be impressed with the fact that they are somewhat behind times if they are not appreciating the value of equipping their kilns with pyrometers.

MORE ABOUT USE OF PYROMETERS FROM MANUFACTURER'S VIEWPOINT

I have been greatly interested in the article appearing in the April 23 issue on "More Ware from Less Fuel by Means of a Pyrometer," says A. M. Price, of the Price Electric Co., Cleveland, Ohio. I wish the writer had given his name. I would go considerably out of the way to meet him because I like the way he looked at the whole proposition and because he has gone at it intelligently. On the whole, there is very little I would object to unless it would be his use of a portable instrument instead of a permanent installation, but I think he had in mind its use for experiment only. Many concerns make the mistake of putting in one couple only at the top, but he has shown the importance of a bottom couple also.

The figures he has given as a saving in fuel and ware are not unusual, especially if the kilns are poorly constructed, the clay of a dense nature or having a prominent carbon period during which the temperature needs to advance slowly until the carbon disappears.

SERVICE IS MAIN TOPIC

What I wish to speak of mostly is the service. I am glad he brought up that question, as that is where we pyrometer manufacturers are often misunderstood. It is so easy for any firm to believe that they are about the center of the universe and ought to be visited often. But when a manufacturer has his customers scattered all over the world it is hard to see them very often, especially is this so if the outfit is small, therefore small margin to use as traveling expenses. True, we often plan trips thru a certain district calling on all our old customers, talking over the benefits they have enjoyed but so often it is only like a visit—we have not been able to help them much, simply because everything was going all right.

Sometimes we find a place where some adjustment is needed or some information should be given about the care of the pyrometer and sometimes we find that for lack of this the use of it has been abandoned. Of course, with an indicating instrument very little adjustment is ever needed, but the recorder should be thoroly understood. The best service we can give is to make it fool-proof, simple and everlastingly durable as possible, sending our blue prints to show all the parts and directions for the setting up and care of the whole outfit. If we send a man to install it, we have him be sure to make the buyer thoroly understand it. If we send it a long distance away, are even more particular about directions. A recording pyrometer cannot be classed with an ordinary clock, but rather with an automobile, or steam engine, therefore some knowledge of it is necessary to keep it in good working order. Often times they tell us they understand it when they do not, or do not take the time to learn about it, which means that their money is thrown away and thereby dissatisfaction is the result.

SERVICE THE KEYNOTE

Our Master gave us a great truth when he said "Whosoever shall be great among you shall be servant of all." This applies to corporations as well as individuals. The business concern that gives the best service will succeed the best. This should be the case with a pyrometer business, and is, when the customers are within easy reach, but when customers are far away and far apart you can see the difficulty. The service then must be by correspondence.

We work hard to discover couples best suited to the various industries. Some pyrometer manufacturers having as many as seven different types to choose from—the smallest able to measure the temperature of a drop of water to the hundredth part of a degree, the largest to reach far into long furnaces. No other industry is receiving at the present day greater attention by the pyrometer manufacturer than the ceramic. We wish there could be more friendly discussion between us, as sometimes a hint may lead to a great benefit to both. So more of you clay men write and criticise as much as you like. You will find most of us agreeable and willing to work hard to produce a satisfactory and efficient pyrometer.

* * *

Place Coal Orders Now

The Fuel Administration issues the following:

The Fuel Administration has been advised that coal consumers in some sections of the country are withholding their orders for coal in the expectation that the zone of distribution may be altered in a way that will broaden their sources of supply. It should be distinctly understood by coal producers, coal dealers and coal consumers that the regulations carrying out the "zoning order" of the distribution of coal consumption were adopted in conjunction with the Railroad Administration, after the most careful study of the whole problem.

POSSIBILITY OF FURTHER RESTRICTION

Any modifications of the zoning plan that may be made will be in the direction of further restriction rather than toward enlarging sources of supply.

War demands for coal as the year advances may demand still further restrictions of the consumer's freedom to choose coal.

There should, therefore, be no further delay upon the part of coal dealers and coal consumers in placing their orders for their coal supply. Patriotism demands that orders be placed at once, in order that the railroads may realize the exact transportation movement demanded for coal, and in order that production may be maintained at a maximum.

* * *

Contract Written on Clay Centuries Ago

William H. Grueby, of the Grueby Faience & Tile Co., Boston, Mass., and an expert on potteries, in a recent address before the Rotary Club of Boston, read a contract written on a piece of clay 3,000 years ago. Mr. Grueby explained that the piece of pottery which he displayed was comparatively recent compared with some that have been excavated.

Discussing the present uses of clay, the speaker said that clay would outlast any known material, bar none.

John Low of Chelsea, he said, made in 1878, the first dull finish tile and the first anti-fraction tile made in the world.

CURRENT LEGAL DECISIONS
AFFECTING BUSINESS

It is the Purpose of This Department to Serve to the Manufacturer of Clay Products a Brief Digest of Decisions Which Have Been Handed Down in the Courts During the Month, Enabling Him to Keep in Close Touch With Legal Developments

"APPURTENANCES" UNDER FIRE INSURANCE POLICY

Where a policy of fire insurance by a printed clause excepts liability for loss to patterns, unless specifically assumed, and the typewritten part of the policy states a risk on all appurtenances, apparatus, and supplies used in the insured's business, liability for a loss of patterns, which were models of castings to be formed for assembling printing presses in the usual course of insured's business, was "specifically assumed"; the patterns being "appurtenances."—165 N. Y. S., 567.

DEPOSITS FOR COLLECTION—RIGHTS OF BANK

A corporation having a deposit in a bank which held its overdue notes for an amount exceeding the deposit, indorsed checks payable to it, and mailed them to the bank with the intent that they should be collected and credited to its account. Subsequently a receiver for the corporation was appointed, and still later the bank, with knowledge of the receivership received the checks, credited them to the corporation, subject to the right to charge them back if not paid, collected them, and credited the amount on the notes. *Held,* that as against the receivers the bank was entitled to the amount collected; the corporation having lost control of the checks before the receivership.—41 F. (U. S.). 715.

BREACH OF DUTY BY AGENT

Where plaintiff and defendant, his salesman, had a joint contract of agency, with the manufacturer of a certain article, giving them the exclusive agency, and defendant, according to his contract of employment, appraised the plaintiff that he was going to terminate the relation, the defendant's acts, between the time of such notice and the time of termination, in notifying customers of the plaintiff that he was about to terminate his relations with the plaintiff and engage in business for himself on the date stated, and that after that date he would be prepared to receive orders for such article in his own behalf, it not appearing that during that time he diverted any orders from plaintiff, was not a breach of his duty to his employer.—165 N. Y. S., 555.

FRAUD NEVER PRESUMED

Fraud cannot be presumed, but must be proved. 75 So. (Ala.) 900.

CORPORATION FRANCHISE

The right to be a corporation is not the subject of barter or sale. 166 P. (Okla.) 186.

RIGHT TO USE NAME

A concern may use its own name in its business, unless it has contracted not to do so. 166 N. Y. S. 79.

CONTRACT FOR INDEFINITE PERIOD

A contract for an indefinite period may be terminated at the will upon giving reasonable notice. 166 N. Y. S. 79.

EXPRESS WARRANTY IN CONTRACT OF SALE

An express warranty of quality in a sale supersedes and excludes all implied warranties thereof. 75 So. (Ala.) 920.

CONSTRUCTION BY PARTIES

Nothing is of more value in construing a lease inartificially phrased than the construction given it by the parties. 166 P. (Cal.) 16.

TAXATION OF CORPORATIONS

In determining the nature of a corporation for the purposes of taxation, the amount of business done or the profits made is of no effect. 101 A. (R. I.) 215.

MODIFICATION OF CONTRACT OF SALE

Modification of contract of sale, by merely remitting part of the price, is without consideration; mutual assent not being enough. 75 So. (Ala.) 918.

POSSESSION INDICATIVE OF OWNERSHIP

A presumption of ownership, in the absence of evidence to the contrary, arises from the possession of personal property. 166 P. (Okla.) 139.

FIXTURES

Personal property is not so attached to realty as to become a fixture if it can be removed without material injury to the property or to the freehold. 166 P. (Ore.) 37.

KNOWLEDGE OF CONTENTS OF INSURANCE POLICY

In the absence of fraud, one who accepts an insurance policy is presumed to know the terms, conditions, and limitations therein contained. 101 A. (N. H.) 212.

LIMITATIONS—PAYMENT BY STRANGER

A payment made upon a promissory note by a stranger thereto and without authority from the maker does not toll the statute of limitations. 166 P. (Okla.) 173.

RELEASE OF SURETY

Where the principal is insolvent when the surety gives the obligee notice to collect from the principal, the surety is not released by such notice. 196 S. W. (Tex.) 632.

SALE OF GOOD WILL

In the absence of an express covenant, there is nothing to prevent the assignor of a business and its good will from conducting a competing business in the same locality. 196 S. W. (Tex.) 605.

PRESUMPTION AS TO AGENT'S AUTHORITY

An agent with power to conduct a particular line of business is presumed to have authority to do whatever is necessary, proper, or usual in the ordinary course of such business. 75 So. (Ala.) 899.

DAMAGES FOR FAILURE TO DELIVER TELEGRAM

Measure of damages recoverable for breach of a contract for the non-delivery of an interstate telegraph message is governed by the law of the state from which the message is sent. 196 S. W. (Tex.) 516.

AGREEMENT TO EXTEND NOTE

An agreement by the payee of notes to give the maker a reasonable time in which to sell property and liquidate the indebtedness is not too indefinite to form the basis for extension, if based on consideration. 196 S. W. (Tex.) 704.

IMPERFECT BANKRUPTCY SCHEDULE

A schedule in bankruptcy, stating that the residence of a creditor is unknown, without statement of due diligence, does not constitute a due scheduling of a judgment, making bankruptcy proceedings a bar to recovery thereon. 166 N. Y. S. 100.

NOTE COVERING FEES FOR COLLECTION

A note could not be said to be usurious because of a clause providing for ten per cent. collection charges and attorney's fees; the amount expended being much more than the amount claimed and awarded therefor.—196 S. W. (Mo.) 447.

CONTRACT TO RESTRICT TRADE COMPETITION

A contract or combination to restrict trade or competition in the supply or price of a commodity in common use is not criminal, unless the parties thereto have sufficient power to control or dominate the particular business.—166 N. Y. S. 136.

FEDERAL POWER OVER INTERSTATE RATES

Congress could and did invest the Interstate Commerce Commission with authority to remove an existing discrimination against interstate commerce by directing a change of an interstate rate prescribed by state authority.—37 Sup. Ct. (U. S.) 656.

TIME OF PAYMENT CONTINGENT

Where a contingency for the payment of an indebtedness is provided, the debt will become due upon the happening of the contingency, and in any event after the expiration of a reasonable time has elapsed, for it to have been brought about.—196 S. W. (Tex.) 704.

BULK SALES LAW

The Bulk Sales Law (Laws 1913, c. 116), prescribing the liability of a vendee of a stock of merchandise in bulk to creditors of the vendor, is not class legislation, but is constitutional as a proper exercise of police power for the prevention of fraud.—163 N. W. (S. D.) 709.

VALIDITY OF IMPLIED CONTRACTS

Parties may be as firmly bound by implied contracts as by those expressed in words, oral or written; they may arrive at agreements by acts and conduct which evince a mutual intention to contract and from which the law implies a contract.—166 P. (Kans.) 234.

A Buy-Way To Good Will

(*Continued from Page 878.*)

your forethought now. He exercised the same forethought years ago. You say you want customers to go out of their way later on to buy from you. Their man Righter, by his hearty sincere handshake, and his cordial smile, so attracted salesmen in the past that they go out of their way to see him. Some of these salesmen pass by other purchasing agents, just to even up old scores. Others just naturally gravitate to Righter's office, as a matter of habit, unconsciously. He has made the business of the Hard Pressed Brick Company worth while."

GOOD SALESMEN MEAN GOOD BUSINESS

"It would seem to me," interrupted Baldwin, "that in his efforts to be on good terms with every salesman, he would have to distribute his orders until his business was spread out as thin as you are yourself."

"Talk about being thin, indeed," responded Danneman, indignantly. "If I were as thin as you are, I'd hire myself out for a bean pole. A man said to me recently, 'You're thin, and I'm thin, but this man Baldwin is as thin as the two of us put together.'"

"At any rate, does it pay to be everyone's customer? I should think a man who was everybody's customer when buying was easy, would be nobody's customer when buying became difficult."

"Who said he was everybody's customer?" asked Danneman, drawing his gloves on his thin hands. "He bought practically all his requirements in each line from one source. That was what made his trade worth while. The man who had it knew if he lost it he would lose it all. The man who was after it knew that if he got any appreciable quantity, he would get it all. And for the same reason, they are being taken care of now. Let me give you an instance: They ran out of spikes; they needed a quantity to continue some necessary improvements. Shipments by freight and by express were embargoed. They made their wants known to the house from which they had been regularly buying such supplies, and what did they do? Why, they loaded two kegs on the automobile of one of their salesmen, and he took a run of nearly a hundred miles to deliver the goods. And another thing: they have been, as you say, hard pressed for cash; but one thing they were never guilty of; they never ran up a big bill with one company and then changed off to another. You know, I suppose, how that makes a fellow feel."

"Indeed I do," agreed Baldwin. "Once another brick man remarked to me, 'I suppose the Uncertain Steel Company has run into your debt pretty deep. They have just begun buying from us!' But do you know, I'm really delighted to hear your comments concerning this man Righter. Do you suppose a purchasing agent could carry out such a course single-handed?"

"Hardly," answered Danneman, his hand on the doorknob. "He would have to be in harmony with the whole outfit. He couldn't play a lone hand, could he?"

"Not much. And that is why he decided to move. He found the other departments were not playing the game according to his standards. For instance, the treasurer would put off creditors with one promise or another, and not worry in case they were not kept. So our chief, after talking the matter over with us, made him a proposition and he lost no time in accepting it. He started in this morning to create an efficient purchasing department for this company. Don't you feel like congratulating us on our new associate?"

"I feel like congratulating Righter," he called back as he vanished thru the doorway.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

Conveyor Belt Data

The following data on conveying belts will be of interest to most clay plant superintendents. The average speed of belts is from 200 to 400 feet per minute, but for carrying clay the average speed is 120 feet per minute.

The slope for flat belts for carrying clay should not be greater than twenty-five degrees. The general slope is eighteen degrees.

For belts of certain widths the drive pulley should have the following diameter:

Width of Belt in Inches	Diameter of Drive Pulley in Inches
12-14	16-18
16-22	20-24
24-28	24-30
30-32	32-36
34	38-42
36	30-48

The capacities for troughed belt conveyors running at the speed of one hundred feet per minute are as follows:

Width of Belt in Inches	Cubic Feet per Hour	Width of Belt in Inches	Cubic Feet per Hour
12	243	30	2,062
14	434	32	2,320
16	625	34	2,590
18	814	36	2,878
20	1,007	38	3,180
22	1,198	40	3,500
24	1,369	42	3,847
26	1,597	44	4,232
28	1,823	46	4,562
		48	4,944

* * *

Frequency of Aligning Shafting

Line shafting should be inspected at least twice a year, and if found defective should be repaired. If the structure is of concrete tho, on a good solid foundation, and if the posts and overhead work are solid, it may be found after several years that there is no appreciable change in alignment of shafting, due to the settling of the building or distortion of floors or columns on account of heavy loads. It is well known that, no matter how solid a concrete floor, it is bound to deflect somewhat under load. The greater the load the greater the deflection. If loading on a floor varies from year to year, it is, therefore, evident that shafting alignment will vary from year to year, especially if the hangers are supported from an overhead floor, on which such load variations are made. In general floor loads in the average plant are not excessive, and unless the floor above is used for a store room the shafting is not liable to be thrown out of alignment.

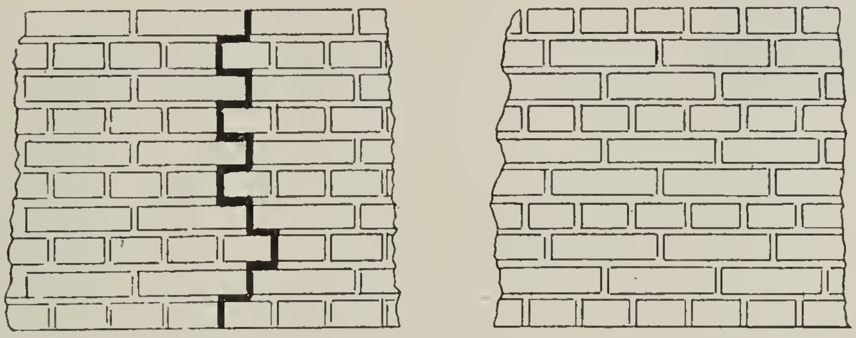
Where buildings, posts, overhead work, and floors are made of wood, we have an entirely different proposition with which to contend. Very often the lumber used in construction isn't properly seasoned. After installation, then, the dimensions of the timber are bound to change. If installed in a room that is damp, the timbers may increase in length, breadth, and thickness. If in a dry room, the timber will decrease in size both longitudinally and laterally. Put the hangers on this green timber, and all will be O. K. for a time, but when affected by humidity or dryness it won't be long until the shafting will be observed to follow a zigzag line, and power will be lost in proportion to the disalignment. Buildings made entirely of wood are the ones that generally warp and change most. If placed on a wooden foundation, the foundation settles, rots, the sills rot and, after several years, the shafting will be found in very bad shape, unless attended to, as already stated, about twice a year.—*W. F. Schaphorst.*

* * *

Brick Bond for Kiln Walls

Many different types of brick bonds for kiln construction have been tried on various plants to find a wall that would withstand the extreme conditions to be met with in kilns. Some authorities are of the opinion that the header stretcher bond is the best one. However, such a bond is extremely weak, as shown by the sketch. It will be observed that the bearing surface of each header is only two and one-half inches at the best, and cracking often results in the rambling form indicated. A better bond is a header alternating with double stretcher courses. The lateral bond has, in this case, been doubled.

It is advisable to carry this same bond thruout the wall, from lining to outside. Hollow wall or air spaces are extremely injurious to any kiln wall; they soon fill with mortar and sand, which tends to spread the walls apart. In addition the heat conveyed away by an ordinary space is far in excess of that of a solid wall.


HEADER–STRETCHER BOND

HEADER–DOUBLE STRETCHER BOND

A Header Alternating With Double Stretcher Courses Is a Better Bond Than the Header Stretcher Bond, as Shown.

* * *

Watch Your Step!

During the last quarter of a century much has been done and said in the field of industrial management and the managerial mechanism developed proved, beyond doubt, that it is nothing but a mechanism and as such may or may not produce the desired results depending on how and by whom this mechanism is used.

THWING PYROMETERS

High Resistance Indicating and Multiple Record Types for all brick and ceramic plants.

Tell us your conditions and we will explain the economies or improvements that pyrometers will effect. Ask for catalog.

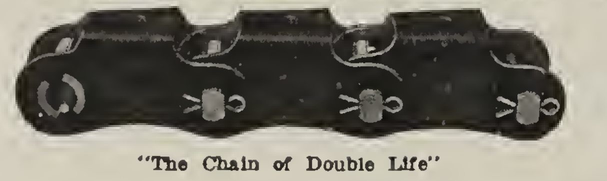
THWING INSTRUMENT COMPANY
3336 Lancaster Ave. Philadelphia, Pa.

WHEEL BARROWS
When They Are Loaded
THEY BALANCE

That is a necessity—else you waste energy. Other features are good, some even better.

THE TORONTO FOUNDRY AND MACHINE CO.
TORONTO, OHIO

UNION STEEL RIVETLESS CHAIN BELTING
Has Large, Glass-Hard Reversible Bearings. Fits Any Std. Sprocket



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Reduces operating costs because it outwears several ordinary chains and gives TROUBLE-PROOF SERVICE wherever used. Sprockets, Buckets, Elevators, etc.—Send for Catalog

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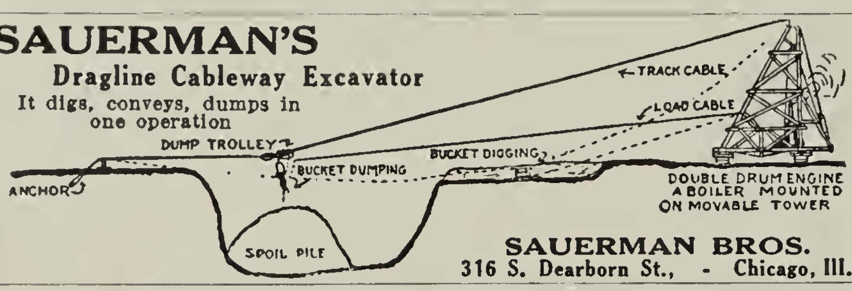
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
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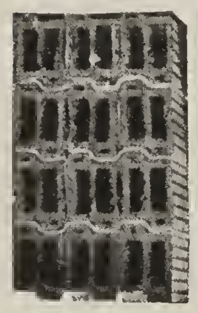

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It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address

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How to Analyze Clay

A practical work for practical people. A Text Book for Clay Analysis, by Holden M. Ashby, Prof. of Organic Chemistry, Harvard Medical College, and Instructor Chicago Night School of Chemistry. An Aid to Beginners and full instructions for making clay analysis. 64 pages, with illustrations. Postpaid to any address in the world, $1.00.

Brick and Clay Record
610 Federal Street, Chicago, Ill.

The management of power plants drags in the tail of the procession probably for two reasons:

First—Because of the fallacy that good equipment necessarily produces good results.

Second—Because financial interests consider the cost of power an insignificant item of the total expense.

Now, when we feel the pinch of the shortage of fuel and, when this shortage not only enhances the cost of power, but endangers the very existence of various industries even the health and well being of communities, these fallacies must be disposed of at once.

It is not the equipment and supplies that produce results, but the mode of their use. When this is realized two problems present themselves to power engineers:

First—To secure mechanism for modern management.

Second—To make proper use of it.

Securing of managerial mechanism envolves the assuming of responsibility by the plant owners, since it is obviously their task to provide the plant with the means to study the causes and effects, to standardize the best practice and to keep adequate and dependable records.

Securing the result of the mechanism envolves the education and training of the employes to make proper use of the available knowledge. Furthermore, they must have permanent and sufficient incentive for learning the better way, taught them by an enlightened management and living up to it. Under such conditions the executive is relieved of all the worries as to routine details as these are standardized and can be well taken care of by subordinates. The major part of the time of the executives may thus be devoted to solving special problems and to further the improvements of the managerial mechanism and its working.

The results accomplished in the plants which have adopted these principles are permanent, since they are worked out from the bottom up and economy accomplished varies all the way from 15 to 50 per cent., depending upon the shape in which the plant was originally found.

To meet the present contingency, both as to men and fuel, the first thing to do is to put the house in order after a thoro study so that the methods may be based on facts, not on opinions and traditions. When this is done, enough room will be found to build up the efficiency and leave alone "better equipment" and other patent cures.

⁂

Make One Man Responsible

Large establishments generally employ one man to oversee all belting, shafting and transmission. Small establishments require their man to do the actual work of aligning, fixing the belts, oiling, etc. It doesn't matter much whether a plant is large or small in that case. The principal point is to make one man responsible for the entire transmission end of the industry. Where one man's business is made everybody's business, it is never done properly, if at all. It is logical that a man who has made a specialty of power transmission knows more about it than the operator of a machine, who knows nothing at all of efficiency, tight belts, centrifugal force, etc. As long as the wheels go round, the layman thinks that that's sufficient. The man responsible for the power transmission should also be made responsible for its cleanliness.—*W. F. Schaphorst.*

IN the WAKE of the NEWS

Being Brief Mention of a Host
of Interesting Happenings in the
Varied Fields of Clayworking

Personal

C. La R. Munson, a brick manufacturer from Williamsport, Pa., was a visitor in San Francisco, Cal., recently.

Henry E. Weitzel, of Wrightsville, Pa., a retired brick manufacturer, died on April 15, at his home, aged 67 years.

J. W. Barber has succeeded C. H. Van Dyke who resigned, as general manager of the Manown Manufacturing Co., Pittsburgh, Pa.

Arthur W. Riggs, of the Brick Sales Co., Cincinnati, Ohio, who has been ill for some weeks, is back at his desk again.

C. H. Bray, secretary and manager of the Western Clay Manufacturing Co., Helena, Mont., has gone to Bozeman on business.

J. P. Turpen, manager of the Columbus office of the Thomas Moulding Co., was called to the southern part of the state on business the latter part of April.

A. L. Baker of the Pacific Lime & Plaster Co., San Francisco is expected to return shortly from a business trip to the southern part of the state and probably as far south as Mexico.

Among the brick men who took an active part in the Liberty Loan campaign in Cincinnati, Ohio, were W. W. and R. H. Coney, of the Moores-Coney Co., who lined up the patriots in good fashion.

After a lingering illness, John Michael Jenkins, age 63, died at his home in Montgomery, Ala., on April 26. Mr. Jenkins, at the time of his death, was president of the Jenkins Brick Co.

L. M. Johnson, who, for some time has been superintending the plant at North Mountain, W. Va., has been sent by his company to take charge of the District Clay Products Co. at Langdon, Washington, D. C.

Henry C. Kleymeyer, general manager of the Standard Brick Manufacturing Co., at Evansville, Ind., recently was on one of the teams to secure new members for the Evansville Manufacturers' Association and the campaign waged was quite successful.

W. H. Gifford, manager of brick department of the Wisconsin Lime and Cement Co., Chicago, Ill., dropped off in Cleveland on his way back from New York City, spending considerable time with old friends there. Mr. Gifford formerly was manager of the face brick department of the Cleveland Builders Supply Co.

Henry Colter, superintendent for the Charles Taylor & Sons Co., Cincinnati, Ohio, manufacturers of fire brick and other fire clay products, was found dead in the yards of the C. H. and D. R. R. It was believed that in seeking a car for the company he was killed by a train. He was 65 years old.

John Andres, secretary and treasurer of the Standard

Joining a belt over and over again spells W-A-S-T-E!

CRESCENT BELT FASTENERS

make a joint that *Stays Put.* Crescentize your belts for economy's sake!

Ask your Dealer! Or write us!

Crescent Belt Fastener Co.
381 Fourth Ave., New York, N. Y.

APPRAISAL OR INVENTORY—WHICH?

Would you desire an easy adjustment, in case of fire? Appraisal of your plant by a reliable firm makes it possible. Here's the proof in a letter from the Shackelford Brick Company, Laurence E. Stone, Treasurer and Manager—

"You no doubt have been informed that our plant was destroyed by fire December 17, 1917, and we take this opportunity of expressing our appreciation of the appraisal rendered our company in November 1916, which proved very beneficial to us in the settlement of our fire insurance. We realize that we would not have been able to adjust this matter as readily or satisfactorily had we not been appraised."

Send us description of your plant, kilns, etc., and approximate value of buildings. We will forward literature and inform you what our charges for appraisal will be.

RAU APPRAISAL COMPANY, Inc.

Patton Bldg.,
Milwaukee, Wis.

Monadnock Block
Chicago (Branch)

Blasting without using the CYCLONE DRILL

is like hunting deer with birdshot. You can't possibly get good results.

We are ready to offer you facts and figures to prove that the Cyclone Drill will soon pay for itself.

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The Sanderson-Cyclone Drill Co.
ORRVILLE, OHIO

GUARD YOUR PLANT
against Fire, Vandalism and Spoiled Ware

Your Night Burner is Only Human

Unless some check is kept upon him he will yield to the legions of slumber, exposing the plant to theft and fire, and letting the kiln fires burn low. Protect yourself against the loss that his negligence may cause. You can do it without expense with the

HARDINGE WATCHMAN'S CLOCK

which will pay for itself in less than one year by the 5% reduction which it effects in the base rates of your insurance

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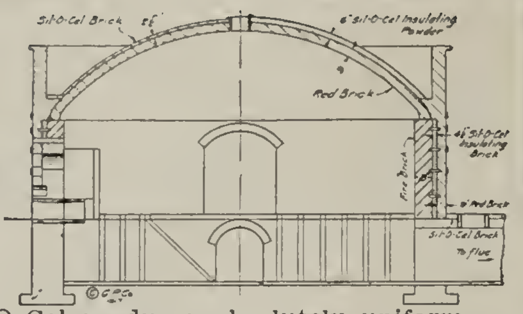
INSULATE THE CROWNS AND WALLS OF YOUR KILNS WITH

SIL-O-CEL

INSULATING BRICK AND POWDER



Sil-O-Cel produces absolutely uniform heat and reduces fuel consumption. Keeps the heat where it is productive. The reduction in rejected pieces will pay for the insulation in the first month of operation.

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NEW YORK 11 Broadway, CHICAGO Monadnock Bldg, PITTSBURGH Oliver Bldg, LOS ANGELES Van Nuys Bldg, SAN FRANCISCO Monadnock Bldg

RINO GEAR SHIELD

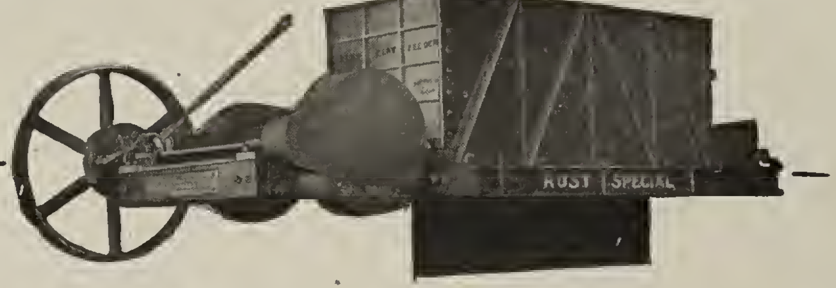
It will prevent wear on your gears and pinions; if it prevents wear, it eliminates frequent replacements; if gears are replaced less, there will be fewer "plant shutdowns"—and that means steady running and profit. You had better investigate Rino.

THE OHIO FILLER & SHIELD CO.
COLUMBUS, OHIO

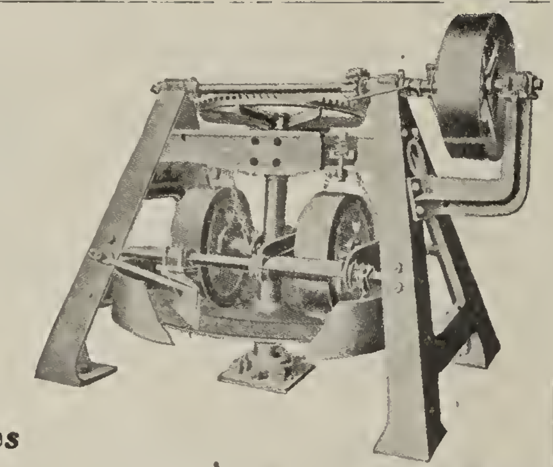
The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



THE EAGLE DRY PAN



Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

Brick Manufacturing Co., at Evansville, Ind., who was reappointed recently as a member of the water works board of that city, is making a splendid record as a city official. Mr. Andres takes a great interest in this work and, being a practical man, is of great help to the board.

H. K. Nickell, son of L. U. Nickell, president of the Fulton (Mo.) Fire Brick Co., who enlisted in the naval reserves June 1, last, as a common sailor, has been commissioned as an ensign, ranking A1 among ten of a class of 104. He was taken from the ranks December 1st, and trained at Pelham Bay, New York training station. Prior to enlistment "Ken" was assistant manager of Swift & Co.'s plant at Newark, N. J.

Private Harold S. Maddock, of Trenton, N. J., formerly vice-president of the Thomas Maddock's Sons Pottery Co., has been granted a commission as second lieutenant in the construction division of the United States Army. Mr. Maddock was a candidate at the Training School for Officers and his advancement has been so rapid that he has been appointed a second lieutenant without the necessity for stopping at any grade between private and this rank. Mr. Maddock is stationed at Camp Dix.

Charles Shannon, manager of the Brazil (Ind.) Clay Products Co., had an unusual experience recently as he was returning to Brazil from attending a business meeting in Terre Haute. Shannon, who was driving his automobile, was met along the way by a Brazil undertaker, with a hearse, who had been sent for his body. It had been reported at Brazil that Shannon had been killed in an automobile accident. Shannon said if he could find the fellow who started the report he would show him that he was "very much alive."

Altho it rather disarranges the sales force, Arthur Livingston, of the Louisville (Ky.) Builders Supply Co., is found patting his boys on the back, and telling them to go to it in connection with the draft. Mr. Livingston has been hard hit, and has just lost another good man in Joseph Coleman, formerly of the City Engineers Office, who has been ordered to report at Camp Taylor. Mr. Livingston recently lost his star salesman and assistant, when A. H. Fairleigh went into the Officers' Reserves and came out a First Lieutenant. B. F. Fields, also with this company, is a First Lieutenant, now, and is stationed at Camp Shelby, Hattiesburg, Miss., or at least he was there on the last report, but that was some time ago. It is thought that both Fairleigh and Fields are either in France or on their way now.

Arkansas

A sharp advance in the price of building brick and brick of all kinds is expected in Arkansas as a result of the order of the fuel administration placing a limit on the output of the brick plants of the country. Brick men in this territory state that the order will result in an extension of the idle period of the plants, thus increasing the overhead expense that will have to be carried by their output.

The Burke Brick & Tile Co.'s plant at Fort Smith, Ark., will not be able to operate more than 90 days longer if the fuel administration's order is not modified, it was stated. The curtailment order has not been received by the company but if the order is based on the average output for the years 1915, 1916 and 1917, in the first two years there being little doing in the brick business in that section, this would give the local plants a low average on which to base the curtailment. It was stated that the March business was

exceptionally good and for that reason the margin left would be small and speedily consumed. The Coffeyville Brick & Tile Co. will probably operate the greater part of the season, as weather prevented operations several months at the beginning of the year, and since that time sufficient labor could not be secured to operate more than one-half the capacity of the plant.

California

The Long Beach Brick Co., Long Beach, Cal., has been awarded a contract for the brick work on the $22,000 Babb building. The company's bid was $3,000.

C. F. Pratt, manager of the Pratt Building Materials Co., San Francisco, says that he has never known a time when there was a greater demand for second-hand brick.

The Fay Improvement Co. has been awarded the contract for the construction of a 14-inch strip of vitrified brick pavement for 44th avenue, between Anza and Balboa streets, San Francisco, at 42 cents per square foot.

The Standard Magnesite Co. of California, at San Francisco, has issued 2,500 shares of its capital stock, par value, to Henry C. Hake and Virgil M. Price. The company has mining claims in Santa Clara and Stanislaus counties.

The following officers were elected at the last annual meeting of the Coleman Brick & Lime Co., Santa Barbara, Cal.: O. E. Miller, president; Magnus Johnson, vice-president; D. O. Kelley, secretary and W. R. Coleman, manager.

The matter of laying a system of clay pipes running north and south in streets and avenues of Ontario, Cal., to drain the storm waters into a reservoir to be used by the desiduous growers of the district, has been referred to the street department for immediate investigation and action.

It is reported that the whole city of Martinez, Cal., is soon to be thoroly re-sewered. Several of the sewer pipe companies of San Francisco, including the following, are now working on a similar job in Kings City, Cal.: Gladding, McBean & Co., the California Pottery Co. and the Pacific Coast Pottery Co.

The Oakland City (Cal.) Council has provided for the construction of the necessary diverting sewers so that the sewage disposal on the marshes of the Key Route basin may be discontinued. The council over-ruled protests against assessments for construction purposes made by the San Francisco-Oakland Terminal Railways and the Southern Pacific.

Seventy-eight employes of the Stockton (Cal). Fire & Enamel Brick Co. subscribed for $7,000 worth of Third Liberty Loan bonds. This sum represents an increase of fifty per cent. over the plant's subscriptions to the second loan. The management hopes to increase the present subscription before the campaign is closed.

O. M. Tupper, of the San Jose Brick Co., with headquarters in the Postal Telegraph Building, San Francisco, reports the installation of new machinery in the plant at San Jose. Last November the fly wheel, one of the important parts of the plant's machinery, got out of order and went thru the roof. Mr. Tupper who has spent most of his time at the factory lately, expects to have everything in running order so that he can start the kiln early in May.

Brick and clay products manufacturers and dealers in California are holding up their end in the drive for democracy. Representatives from many of the principal plants in the state with headquarters in San Francisco have been prominent in the Third Liberty Loan activities during the past

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Get This Can on TRIAL

Keep your belts from slipping. Don't let them rot.

"SERO" Belt Dressing

makes them efficient.

"Sero" on your belts reduces the power consumption and prolongs the life of the belt.

Sero Specialty Co., Cleveland, O.

We also make "Sero" Gear and Cable Coating and Manila Rope Dressing.

Aerial Tramways
For Economical Haulage

Manufactured by
BRODERICK & BASCOM ROPE CO.
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IN THE HEART OF THINGS

400 Baths
600 Rooms!

Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business

157 Pleasant Rooms with Private Bath
$2.50 Per Day

257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
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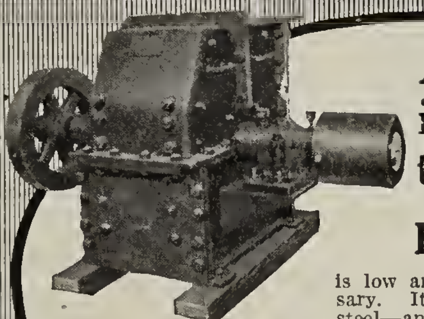
Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate



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The initial cost of a

K-B Pulverizer

is low and covers about all the outlay necessary. It is built throughout of high grade steel—and is practically indestructible.
There's a substantial saving in power costs as well.

Send now for catalog with interesting
There's a substantial saving in power costs as well.

K-B Pulverizer Company, Inc.
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Uniform Heat

In Kiln or Dryer is essential to uniformity of product.

BRISTOL'S

Recording Pyrometers

Record the temperatures maintained. The accumulated knowledge secured by these records enable you to secure the maximum in production and quality. Write for Bulletin 205.

The Bristol Co., Waterbury, Conn., U. S. A.

The A-B-C of Cost Saving

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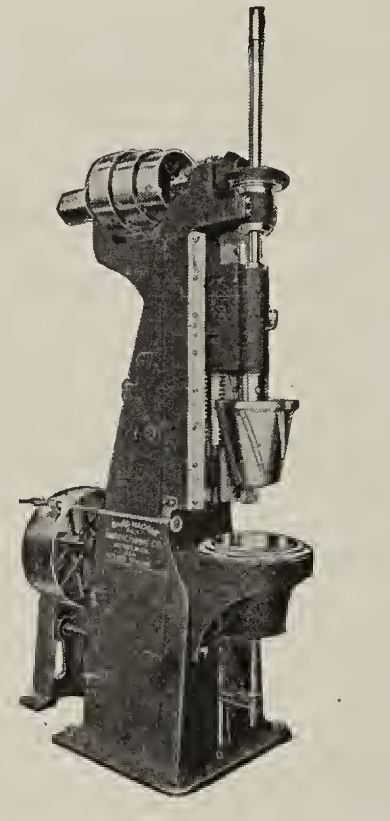
Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"

MARINETTE IRON WORKS

MARINETTE, WIS. C. J. ANDERSON, Prop.



FLOWER POTS

You can manufacture them on most any brick or tile plant as a profitable side line. Send us a sample of your clay. Let's find out if you can do it.

BAIRD MACHINE & MFG. CO.

54-56 Jefferson Avenue Detroit, Michigan

two weeks. Many of these men marched in the parade on the opening day and took part in the war-song-fest which followed in the Civic Center. There is scarcely a brick or clay industry represented in San Francisco which does not boast a complete round-up of its employes in bond subscriptions. Manufacturers of all clay products in California, as well as in other places, were hard hit by the recent regulation of the United States Fuel Administration, limiting their production to fifty per cent. of last year, but as long as the sacrifice will in any way help in the war for freedom from autocracy, no one is complaining. As Eugene Corrigan, of the Stockton Fire & Enamel Brick Co. says, there is no room for laxity in these days, and no one has any right to grow weary in well-doing as long as the war lasts.

Connecticut

Brickmakers thruout Connecticut are busily engaged in pumping out clay pits which have filled up with water during the winter months. The Berlin pits contain a considerable amount of water, some having been pumped out to such an extent as to permit getting at the clay, which is the case with the Merwin Brick Co.'s yards at Berlin. The Connley interests on the Berlin pike are getting things in order for the spring trade. A big supply of wood is being stocked by all yards for summer burning. Steam and electric shovels, gasoline and electric steam locomotives and conveyors are being put in shape in anticipation of a lively spring trade.

Florida

The Caldwell Brick Co., Miami, Fla., recently organized, has leased a large brick manufacturing plant in South Bristol having a daily capacity of 20,000 shale brick. Plans are under consideration for the installation of additional equipment to increase the capacity to about 50,000 brick daily. Joseph A. Caldwell is president; Fred Dulaney vice-president, and William E. Eberhardt secretary-treasurer.

Georgia

Brick manufacturers in the Southeast have appointed a committee, of which A. Howard Bickerstaff, of Columbus, Ga. is a member, to go to Washington and confer with the fuel administration, requesting a modification of the order by which the production of brick would be curtailed. A meeting of the brick manufacturers was held in Atlanta to discuss the situation and several Columbus men were in attendance. The brick manufacturers say that the ruling is not fair to those in the Southeast, inasmuch as the brick production in this section has been far below normal during the past three years, so that the ruling of the fuel board will give the South less than one-half of its normal production.

Idaho

Tom Hall, superintendent of the Moscow (Idaho) Fire Brick & Clay Products Co., advises that the company is enjoying a good business, and that the plant is being run to full capacity. An order for 200,000 standard fire brick and 100 tons of special size fire brick has just been booked for shipment to Oregon and Washington points. The company expects to construct another dryer very shortly, to take care of the increasing demand for its product. Mr. Hall says: "The company is shipping in one car or fifty tons of fire clay a day from the deposits at Joel, a distance of six miles from the plant, and this amount will be doubled in the next thirty days so as to have a surplus on hand in case of emergencies, as with orders other than the above mentioned on file, the company has six months' work ahead. It has been customary to set sixty to seventy thousand standard fire brick in a thirty-foot kiln, but owing to lack of kiln room, we have gradually increased this amount to ninety thousand, with splendid results. We are now setting thirty-six high and set close up to side walls and crown around sides of kiln, leaving opening in front of fires only for fire to travel to centre of kiln. This has cut down the cost of our burning considerably, as it enables us to load twenty thousand more brick in the kiln, and only one day longer is required to burn with a larger percentage of No. 1 brick. I would advise any brickmaker to give this a trial if his fire clay will stand up under such a load, as owing to the increased cost of fuel, etc., it will help out on the high cost of labor."

Illinois

The Jointless Fire Brick Co., a Chicago, Ill. corporation, has increased its capital stock from $10,000 to $20,000.

The Lombard (Ill.) Brick & Tile Co. has been granted an extension of its charter.

The Purington Paving Brick Co. has resumed operations at yards No. 1 and 3 at Galesburg, Ill., which have been idle for some time.

Indiana

The plant of the Veedersburg (Ind.) Paving Co., which had been closed for several months, has been re-opened.

The labor shortage is again worrying many of the brick manufacturers in Southern Indiana and before the season is over it is expected the problem will become more acute than ever.

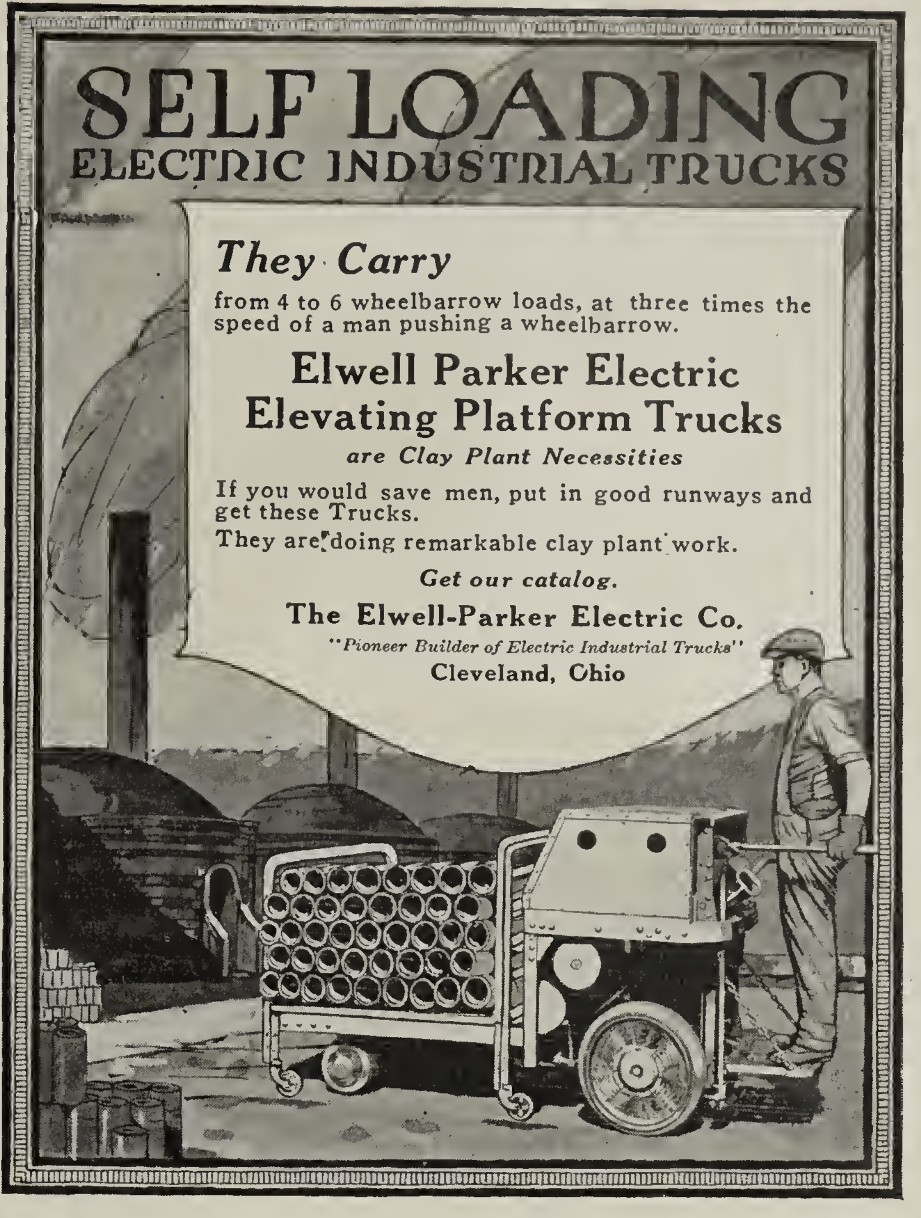
Bids were opened on May 1 for the construction of a new brick school at Lynnville, Ind., the plans having been drawn by an Evansville architect. The structure will cost in the neighborhood of $40,000 and will be completed in time for the school term next fall.

The Cannelton (Ind.) Sewer Pipe Co. and the U. S. Brick Co., at Tell City, Ind., have helped to defray the expenses of an advertising campaign which the newspapers at Cannelton and Tell City have been carrying on, with full page advertisements, boosting the Third Liberty Loan.

A newly organized concern, known as the Spice Valley Clay Co., at Huron, Ind., has filed incorporation papers with the secretary of state to engage in mining clay and other minerals. The capital stock is $2,000. The directors are Joseph G. Phipps, Thomas M. Ryan and Lettie A. Bond.

The stockholders of the U. S. Brick Co. of Tell City, Ind., held a meeting a few days ago and selected the following directors to serve the ensuing year: Nick Goffinet, Charles F. Hermann and Peter J. Hermann. The company has been doing a very nice business during the past month in spite of war conditions.

Mayor Benjamin Bosse of Evansville, Ind., issued an order recently to the Board of Public Works of that city to the effect that all public improvement would stop for the period of the present war with the exception of the contracts already let. This will mean that street work will be stopped in Evansville for the time being. It has been planned to con-


SELF LOADING
ELECTRIC INDUSTRIAL TRUCKS

They Carry
from 4 to 6 wheelbarrow loads, at three times the speed of a man pushing a wheelbarrow.

Elwell Parker Electric Elevating Platform Trucks
are Clay Plant Necessities

If you would save men, put in good runways and get these Trucks.
They are doing remarkable clay plant work.

Get our catalog.

The Elwell-Parker Electric Co.
"Pioneer Builder of Electric Industrial Trucks"
Cleveland, Ohio

What Do You Know About Silos?

We recognize the fact that you know a great deal more than we do about the making of silo blocks. This is a specialty, and we are sure you are making a high quality ware.

But—the satisfaction the farmer gets from a silo depends also on the doors, roofs, chutes and the re-enforcing. That's where we come in, because we are specialists in silo hardware accessories.

We will be glad to cooperate with you in this matter of mutual importance to us.

The Pierce Company
1106 Waldheim Bldg., Kansas City, Mo.

A Better Drier
MEANS A
Better Product

An improved heating system FLEXIBLE in arrangement enables us to exactly FIT the piping to the special requirements of YOUR clay and steam conditions: For a better product, install this better drying system—

THE STANDARD DRIER
With the Flexible Heating System

Let us send you printed matter giving full details. There is no obligation. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.

A Patriotic Necessity That Is Profitable To You

When you install Beighlee's Pyrometer, you are serving the nation by conserving the coal or fuel supply. In addition you profit yourself by virtue of the smaller amount of fuel needed, and by virtue of the greater quantity of better ware produced. Beighlee Pyrometers do not get out of order easily, they are sturdy yet very accurate—and they always save for their owners.

The Beighlee Electric Co., Cleveland, O.

struct several streets during the coming summer and fall and some of these streets were to have been improved with brick.

Brick manufacturers at Evansville, Ind. and other towns and cities in Southern Indiana report that trade is only fair at this time and in fact no boom in trade is looked for until after the close of the war. There has been a slight improvement in building operations during the past week and with the coming of more settled weather it is expected there will be more building started. Some of the brick factories are being operated on full time but others are closed or are being operated on a short schedule only.

The Indiana Paving Brick Co.'s plant at Brazil, Ind., which has been closed down since the severe cold spell in January, will resume operations within the next few weeks. It is said that the company has orders on hand that will keep the plant in operation at full capacity all summer and fall. During the shut-down the plant has been undergoing needed repairs, and a large shale crusher has been installed.

The Standard Brick Manufacturing Co., Evansville, Ind., reports that considering the conditions brought about by the war, business is fair. This company is furnishing the brick for a new addition to the factory of the Keck-Gonnerman Machine Works, at Mt. Vernon. It also has several other small contracts that are being filled. One of the largest contracts the company has is that of the Junior high school at Evansville, Ind., this building to cost in the neighborhood of $200,000. Work on this building is being rapidly pushed.

The German-American Clay Co., of Muncie, Ind., operating clay mines in Kentucky, has filed notice with the county recorder at Muncie, that it will file a petition with the secretary of state in Indianapolis for permission to change its name to The American Clay Co. of Indiana. No reason for the change was given in the petition, but Charles Gill, president of the company, said it wished to have no connection, even in name, with anything that is German. The company is an Indiana corporation subsidiary to the Gill Clay Pot Co. of Muncie.

Kentucky

The Ashland (Ky.) Coal & Fireclay Co., with a capital of $1,500, has been incorporated by Charles Smith, Sam Smith and Edward Fannin.

The first of the sectional monthly meetings of the Kentucky Clay Products' Association will shortly be held at Lexington, Ky. J. T. Howington, of Louisville, and other Louisville brick men plan attending. These divisional meetings will probably be well supported, from present indications.

Altho there are not many large orders for brick being placed at this time in Kentucky, with the exception of a few fairly large plant additions, the volume of small orders has been holding up somewhat better than had been expected, and conditions are fair, considering the various elements with which the trade has to contend.

The Central City (Ky.) Brick Manufacturing Co.'s property has changed ownership, and is now in the hands of U. C. Fortney, S. P. Jarvis, Virgil Jarvis and J. A. Smith, who purchased the lease on the property, machinery, etc. The new owners will continue under the old name, and expect to produce more than a million brick this summer.

Isaac H. Tyler, sales-manager of the R. B. Tyler Co., Louisville, Ky., reports business as very good, all things considered. However, the largest brick order on the books at the present time is for 80,000 Huntingburg brick, made by the Southern Indiana Clay Products Co., for use in a school at Lebanon, Ky.

The City Council of Barbourville, Ky., recently passed a city ordinance, with one dissenting vote, which called for all city thorofares to be paved with either brick, concrete or macadam, and brick as usual was placed at the head of the list of materials which could be used. The choice of the three materials will be left to the majority of the property owners thru which such streets will pass.

Common brick prices in Louisville have been jumped $1.50 per thousand by the brick manufacturers, jobbers and retailers within the past few days. The former price was $11.50 on cars, or $13.50 delivered. They are now quoted at $13 and $15, and the brick man much prefers that the buyers do the hauling, as teams and men are very scarce, and wages to brick passers are so high that there is no profit in delivering brick even at $2 a thousand. Face brick have advanced $2 to $4 a thousand, and there has been a general advance in all grades of fancy brick.

At Barbourville, Ky., the Barbourville Brick Co., capital $40,000, has been incorporated by L. I. Richardson, Joe Mitchell and Hiram Owens. This company takes over the plant of the Barbourville Brick & Tile Co., which was established thirteen years ago, and which has been considered a flourishing industry. It is understood that the business was sold to the new owners for a consideration of $50,000, and it has been announced that additional machinery will be installed at an early date, and numerous improvements made.

Indications are that Lousiville brickmakers and those of Central Kentucky will shortly have to depend on a lower grade of coal. It is reported that the Harlan and Straight Creek grades are to be diverted to the coal product industries, which will leave Kentucky industries depending on the lower grade Western Kentucky coal, and what Jellico coal can be obtained. Western Kentucky coal is a much poorer grade and generally sells at a dollar a ton less than Eastern Kentucky. Large consumers of coal are now placing season contracts for supplies at Government prices, figuring that they will obtain better deliveries.

There has been considerable trouble in securing labor in Louisville brick plants recently and there has been some discussion of employing female labor on lighter work, this having been undertaken by lumber and woodworking concerns as well as other industries. Some of the brick plants have had numerous applications from big strong negro women. It is reported that in some of the southern brick plants women are being used on light work, but so far nothing of that kind has been undertaken locally, but may come to pass if the situation does not improve.

Louisville (Ky.) brick men have been discussing the new regulations of the fuel administration curtailing production of clay products during the war. Due to the fact that local concerns have been supplying a considerable amount of material for Government construction the orders may interfere somewhat with handling regular commercial business, if the year's production is based on business since January 1. However, it is believed that in cases where the plants run thru their percentage, and there are still Government orders to fill, no difficulty will be observed in obtaining permits.

Arthur Loomis, a Louisville architect, who has always been a good friend of the brickmen, and a supporter of brick construction, came out solidly for brick a few days

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand, Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity, Durability and Satisfaction

The Harrington & King Perforating Co.
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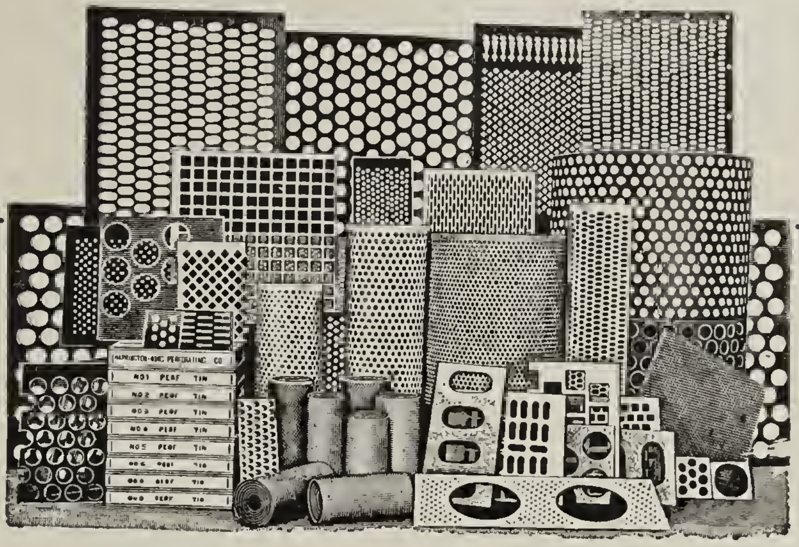

Your Fortune For Coal Or Use Canton Shaking Kiln Grates
Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.

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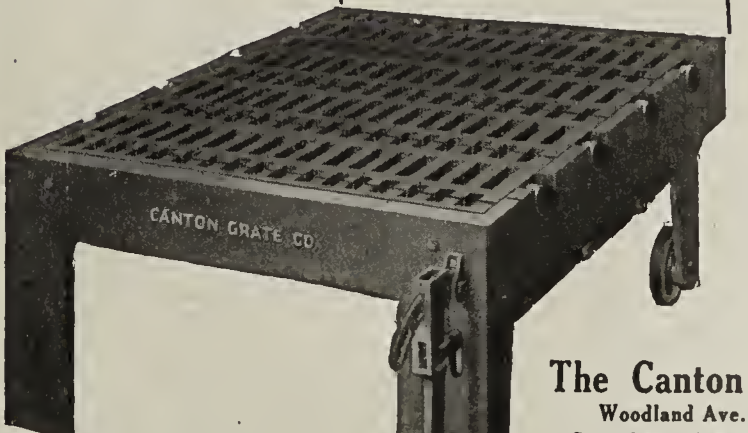

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SAY I SAW IT IN BRICK AND CLAY RECORD

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ROLLIN'S
BARIUM
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vs SCUM

and Rollin's always
Wins.

Add it to your clay at the pug mill, or the dry pan, it makes the scum producing salts insoluble and harmless to your ware.

Ask for information.

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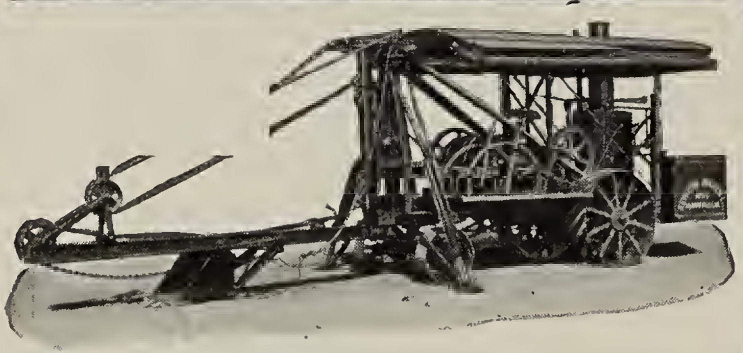
KEYSTONE



Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

ago when plans for building a new auditorium for the Louisville Women's Club were discussed. This club recently lost its fine local home by fire. It has purchased a fine old residence, and plans to erect an adjoining auditorium. When the question of building was brought before Mr. Loomis he advised brick construction, stating that of all materials brick represented the cheapest and best form of construction, and indications are that the new portion of the plant will be of brick.

Articles of incorporation have been filed by the National Process Co., of Louisville, Ky., with a capital stock of $100,000, divided into 1,000 shares. The company proposes "to acquire land and prepare for the marketing of ore, metal, clay, coal and mineral substances of all kinds," but will primarily be a clay products concern. The incorporators are all prominent men who have had much experience in operating lime, cement and kindred plants, as they are all connected with the J. B. Speed Co., sales agents for, and owners of the Louisville Cement Co., which has large plants at Speeds and Milltown, Ind. These incorporators are William S. Speed, president; Fred M. Sackett, vice-president; Henry S. Gray, secretary-treasurer; and H. E. Brookby and E. J. Heimerdinger. Mr. Speed stated that at the outset the company would feature production of clay and certain chemicals, but would probably get into brick manufacturing later on.

Louisiana

The Plaquemine (La.) Brickyard Co., Inc., has filed its charter in the office of the recorder. The company has a cash capital of $15,000. The officers are: Adonis P. Schnebelin, president; Chas. Schnebelin, vice-president, and Walter E. Bryant, secretary and treasurer.

Massachusetts

The newly formed New England Section of the American Ceramic Society held its spring meeting at the Boston (Mass.) City Club, April 13. A number of New England manufacturers were represented in the attendance and many matters of business interest were discussed in a sort of round table conference. An excellent dinner was one of the chief features of the evening's program. The officers of the organization, elected at the first meeting in Worcester last December are: chairman, A. A. Klein, the Norton Co., Worcester; secretary, C. L. Walduck, Grueby Faience & Tile Co., Boston; and councillor, C. H. Kerr, American Optical Co., Southbridge.

Altho the order of the fuel administration curtailing the output of brick and other similar clay products has caused some uncertainty among brick manufacturers in Massachusetts, as to just where they stand, an increasing demand for brick is noted and in most instances plans are going along for the resumption of work at an early date in most of the yards not already in operation. The demand for homes for shipyard and factory workers as well as necessary additions to manufacturing establishments will mean that a considerable amount of brick will be required regardless of rerestrictions. One contract soon to be placed is for 350,000 water-struck brick for a new tuberculosis hospital at Waltham and there are a number of firms that would like to land it.

Nebraska

E. W. Gruber, a brick manufacturer of Ord, Neb., advises under date of April 27 that in spite of the labor shortage, he expects to be able to start operations at his plant about May 15. Brick are scarce in that section of the country, he advises, and prospects are good for this season.

New Jersey

The building activity in Newark and vicinity continues, with a marked improvement in the general building situation, and much hope has been expressed that the condition will be more than a transient one. The mental tone of the building industry has brightened considerably, and it is thought that this condition has been brought about by the placing of a number of contracts for Government work. Government building operations continue without cessation and each week witnesses the Federal construction program materially extended. There has been a large increase in the volume of small house projects, and it is understood that work will commence on the construction of many multi-family dwellings at an early date. A number of building permits for small industrial works have been taken out and contracts placed; the Art Metal Works, Newark, has commenced the construction of an addition to its plant costing $25,000; a new seven-story cold storage plant will be erected by the Union Terminal Cold Storage Co., Jersey City, at a cost of approximately $120,000; and a number of additions to smaller plants are now under way.

New Mexico

The industrial agent for the Santa Fe railroad has sent a communication to the Chamber of Commerce of Isleta, N. Mex., asking for samples of the red and black clays of that vicinity for testing by an eastern pottery firm. It appears that many of the finer clays used in pottery have heretofore been imported from Germany and Austria, and this source of supply having been cut off, pottery manufacturers are looking for deposits in this country which would answer the same purpose. The Chamber of Commerce has requested Pablo Abeyta, of Isleta, to collect a number of samples, twenty-five pounds each, of the clays used by the Isleta Pueblo, which are to be forwarded to eastern pottery works. If the samples prove satisfactory, it is believed that local Indians might conduct an important mining industry in the furnishing of clays for commercial purposes.

New York

D. K. Poole of Utica, N. Y. has been granted a permit to erect a brick manufacturing plant on Wheeler avenue, at an estimated cost of $13,000.

Plans are under way for the establishment of a new brick plant near Ogdensburg, N. Y. The company will be capitalized at $15,000, most of which has been subscribed.

The plant of the Troy (N. Y.) Fireproofing Co., at South River and Tyler streets has resumed operations after a suspension of several months. About 150 men are now employed at the company's clay bank.

County fuel administrators thruout New York state have sent notices to manufacturers of common brick, face brick and paving brick to restrict manufacturing of these products to fifty per cent. of the production for the past three years' average. This action is in conformity with the government ruling to that effect.

The War Industrial Corporation of Watertown, N. Y., organized to build between 600 and 700 houses to take care of the overflow population resulting from the influx of workers

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Mercurial, Recording and Index Thermometers for all industrial and laboratory applications.
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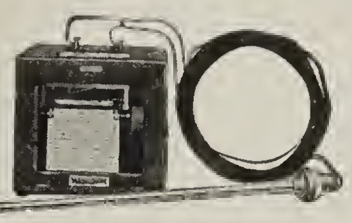

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we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

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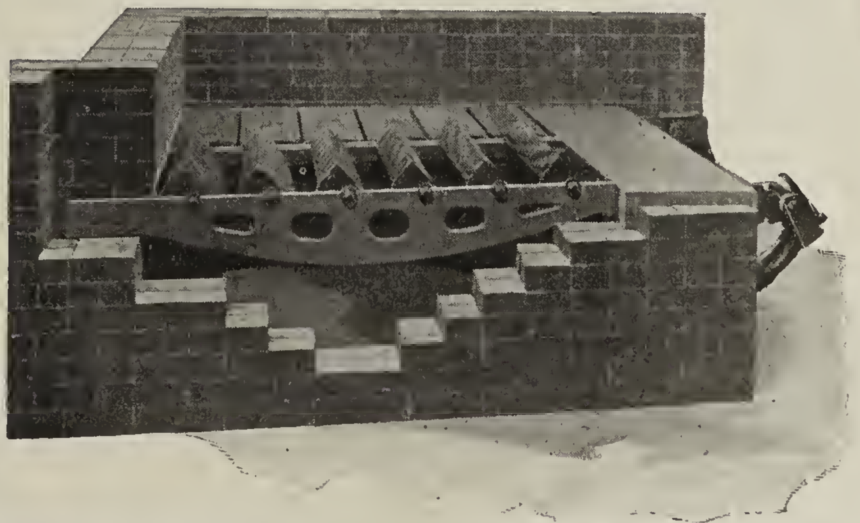

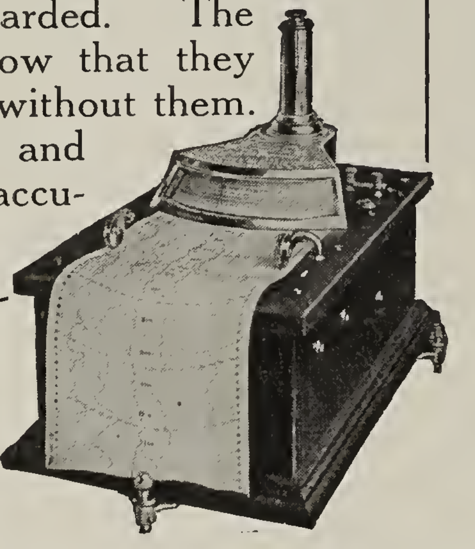

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If you had them on your plant today, you would burn one, two, three, ten . . . tons less coal each day. This condition always happens, and it is the reason why once used—never discarded. The USERS know that they can not do without them.

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You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated
Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H.—the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
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Chicago, Ill. St. Louis, Mo. Philadelphia, Pa.
Cincinnati, O. Kansas City, Mo. Boston, Mass.
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We carry a complete line of high grade chemicals for the clay industry

in munition plants in that city has taken steps toward incorporation and will take the final action as soon as President Wilson signs the federal housing bill appropriating $50,000,000 to assist in building homes for war workers. Representatives of a number of building concerns are already in Watertown bidding on the work.

Ohio

The building of a $100,000 hotel at Marion, Ohio has been stopped by the federal government officials on the grounds that it is non essential work and should be postponed until after the war.

Common brick are fairly strong in Ohio territory, according to manufacturers and jobbers of that class of clay products. Prices are steady and mud brick are selling at $12 while wire-cut commons are selling at $13. Common brick plants are being operated, altho with a reduced output.

The plant of the Anders Shale Brick Co., Cincinnati, Ohio, was sold by the Effron Mercantile Co., at auction to J. Richmond, for $15,100. It is said that he purchased the plant for a syndicate. When it will be operated again has not been ascertained.

Bids were opened April 26 by the Ohio Highway Commission for considerable road improvement work in various parts of Ohio. Monolithic brick was specified in one contract for 1.191 miles in Hancock County and brick in another contract for 3.674 miles in the same county.

The Blair Brick Co., Cincinnati, Ohio, has completed its barges, but the plant is not as yet in operation nor are any brick being shipped. The lack of demand at this time for common brick has been so marked that there is no great incentive to ship brick. Still with a good supply on hand the company is in a posiiton to meet any ordinary demand promptly.

H. F. White, manager of the brick department of the Hocking Valley Products Co., Columbus, Ohio is authority for the statement that shipping facilities on face brick are improving slightly. This is especially true on the Hocking Valley Railway where the supply of box cars is slightly better. The plant at Greendale is not yet in operation but steps may be taken to start soon if the demand will warrant.

J. R. Marker, commissioner of the Ohio Paving Brick Manufacturers' Association, who has been interesting himself largely in securing favorable consideration of brick as a road building material, has been quite successful judging from the increasing number of brick specifications in paving projects both in Ohio and portions of Michigan, which is also covered by the Ohio organization. He reports a good many paving projects which will probably be pushed during the coming summer.

Emmet Howard, head of the Columbus (Ohio) Fire Brick Co., has taken on common brick, building tile and drain tile in addition to fire brick. He intends to enlarge his line to all clay products. Mr. Howard is agent for the Union Furnace (Ohio) Brick Co., manufacturers of fire brick, and reports a good demand for fire brick with shipping facilities growing slightly better. A large part of the fire brick orders are given preferred shipment, according to federal regulations.

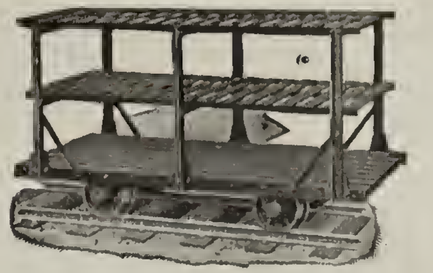
Judging from what information has been obtained by Columbus (Ohio) manufacturers and dealers in clay products, little material remains to be bought for the $5,000,000 federal storage plant which is to be erected on the Pennsylvania and Baltimore & Ohio, a short distance east of Columbus. The contract has been awarded to the Hunkin-Conkey Co., Cleveland, and it is understood that contracts have been made for the steel, common brick, fireproofing, tile and other materials.

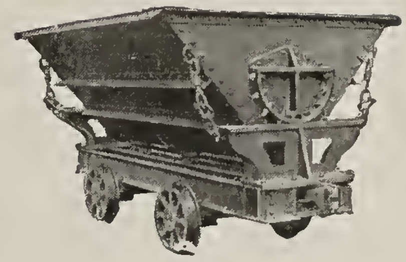
A meeting of the red and buff section of the Ohio Face Brick Manufacturers' Association was held at the Deshler Hotel, Columbus, Ohio, recently, when the order of federal authorities to reduce the output of face brick plants 50 per cent. was discussed at length. It was the consensus of opinion that the order will soon mean the advance of from $3 to $4 per thousand on all face brick and probably on common brick. It is pointed out that because of increasing overhead, the reduction in the output will make it necessary to advance the price. Thus it is seen that the result of the order will be higher prices, which will have to be stood by the consuming public.

There will be no strike or other drastic step on the part of building trades employes in Cleveland, Ohio. This decision was reached recently by representatives of the different unions. An arbitration board, comprising an equal number of members from the unions and the Cleveland Builders Exchange, will discuss the differences between the two factions. The principal question to be settled by this board will be that of wages, agreements on which expired May 1. At the meeting of employes and employers at which this decision was reached, the employers were represented by George F. Thesmacher, president of the Building Trades Employers' Association; Harry Masters, Ira S. Gifford, Sam W. Emerson, Karl H. Pratt, Walter Klee and E. W. Reaugh.

What may prove to be a serious obstacle to paving work in municipalities in Ohio developed recently when the Capital Securities Commission at Washington prohibited the issue of $500,000 bonds for street improvements in Columbus, Ohio. The bonds were voted by the city council and approved by the people at a recent election. City Solicitor Scarlett has been wrestling with the matter with Chairman Paul Warburg of the commission for some time. When the final decision was sent from Washington Governor Cox was appealed to, to have the decision changed. Two of the streets which were to be improved are part of the National Highway which the federal government has undertaken to have rehabiliated. In making his decision, Chairman Warburg said that national interests will be conserved by postponing such work until after the war. It is feared similar decisions will be made on other work in the Buckeye State.

Despite the fact, or we might say because of this condition, the War, Cincinnati has been one of the most loyal of all cities in the matter of helping to win the war. The building industry has suffered. The brick and clay products men do not complain of this, for if the city does not build plants, buildings and homes, she at least gives her cash generously to the cause. So Cincinnati has been a leader in every campaign for cash. In the Third Liberty Loan campaign she has once more made a record that can well make her citizens feel a pardonable pride in the achievement. Being the second large city to reach her quota justly entitles her to this view of the matter. The amount asked for was something more than $20,000,000. This included Hamilton County. It was not very long before this was passed and two Liberty Loan flags were floating on Fountain Square. She is leaping forward with the hope that this amount will reach $30,000,000, a record indeed of which to boast. Of course the clay fraternity did their bit and the loyalty of





WATT CARS

come to you always in good condition, and thru years of usage they stay good, because—the riveting, the welding, the bolts, the plates, the wheels, the bearings, the axles—all of the car is the best that best can be.

Of course the very good reason for this is that we are proud of every car that leaves our factory; we know that the reputation it makes, is the reputation of our firm.

GOOD CARS

for clay plants must be sturdy, stout and easy running, which is a real description of our cars. When next you want Cars, we want an opportunity to tell you about Watt Cars. Perhaps you want to know NOW, write.

The Watt Mining Car Wheel Company

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When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
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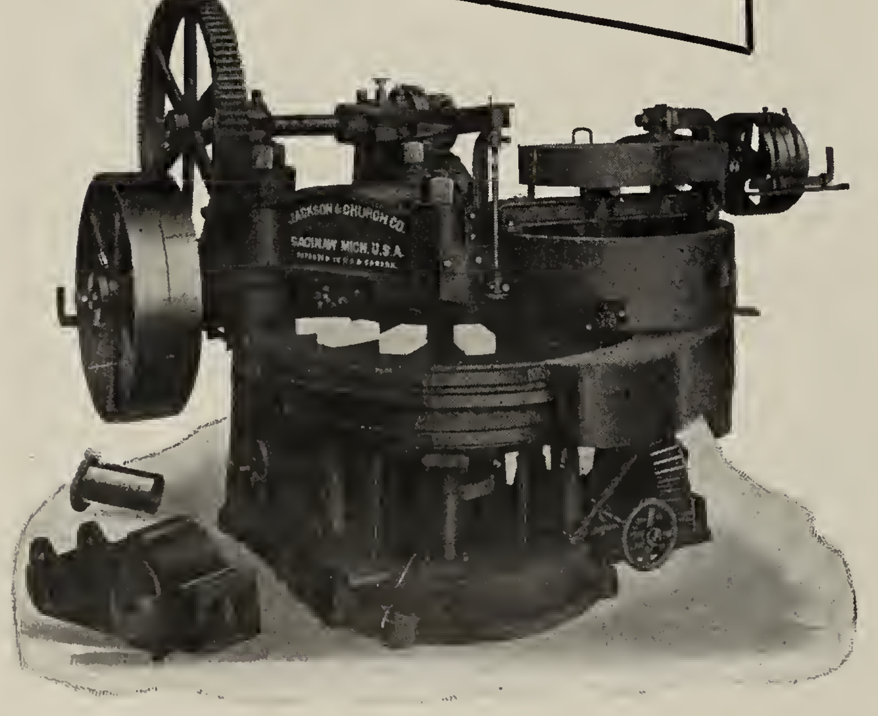


The "Saginaw" Rotary Table Brick Press

the men whose business has been handicapped is none the less evidenced.

Brick interests will not be affected by the new coal order of the fuel administration as it affects manufacturing industries, is the opinion of John Harms, general manager of the American Face Brick Co., Cleveland, Ohio. "There is enough brick on hand in the yards, as well as in the local material dealers' yards, to take care of all 1918 building, thus offsetting this coal reduction," said Mr. Harms. "Several of the bigger manufacturers now are negotiating with Washington to make a brick block, which is a hollow block with a face front. This will enable more brick to be shipped at one time, and will take only half the fuel to burn. For example, to build a certain wall now a manufacturer has to ship two cars of brick. With the hollow brick the two cars could be condensed to one, for while the space taken up would be the same, the weight would be but half, and one car could carry it, as the cars have a set tonnage. We find business in Cleveland is just about 50 per cent. below that of last year at this time. Two firms soon will get patents on the new '2 in 1' brick. This principle will cut down building construction cost about 25 per cent., that is whereever brick is used. This move, we believe, is in harmony with the government's plan to cut down coal consumption, as less fuel is required to produce. It also cuts down car consumption in the transportation end. Our spring sales this year are mostly in the highest priced brick, as most building is being done by the wealthy or well to do. In nearly every instance the tapestry designs are wanted."

Oklahoma

In building up the great plant of the Okmulgee (Okla.) Window Glass Co., Dr. L. S. Skelton has completed a modern fire clay products manufacturing factory. The Skelton fire clay plant is but a part of the big window glass factory and occupies two two-story buildings and also the basement of another building. Twenty skilled men are employed under Superintendent Gilbert Stickler. The equipment, including grinding, mixing, molding and drying machinery, represents an investment of $150,000.

Pennsylvania

The brick works of Samuel Landis, New Berlinville, Pa., resumed operations recently after being idle during the greater part of the winter for lack of coal. Orders are booked insuring steady operations for the entire summer.

Binder Brothers, owners of the brick works at Macungie, Pa., have cleared their yards of all accumulated brick and will again start their kilns expecting to manufacture a million brick early in the summer and several million after the harvest season.

The Bessemer (Pa.) plant of the Metropolitan Paving Brick Co., formerly the property of the Bessemer Limestone Co., is working to capacity despite the fact that some of the other units of the concern are working on a basis that makes about 50 per cent. production for the corporation. Fuel restrictions against brick companies are among the causes of the reduced brick output. It is believed, however, that the need of brick roads which will stand the movement of army motor trucks all seasons of the year may cause the federal authorities to relax regulations on brick making and also occasion a large amount of main highway road making. In view of this fact some of the brick makers are more optimistic over the outlook for their business than they have been for some time.

Rhode Island

The Woonsocket (R. I.) city government in awarding a contract recently for the installation of a surface water drain in East street in that city established an interesting precedent in making an additional allowance to the contractor in order that he might purchase the drain pipe required near home and thus avoid railroad delays. The only bidder for the work was S. Brien & Sons whose figure was $4,591. The contractor explained that this bid was based upon the cost of drain pipe which he proposed to order in the West, which could not arrive for some time but that at a slight additional cost he could obtain his material at Portland, Me., and finish the job in a much shorter time. The board thereupon voted to allow in addition to the contract price, 12 to 14 cents per foot for pipe used providing it was obtained at Portland as suggested.

South Carolina

Fire of unknown origin destroyed a large kiln shed at the G. A. Guignard brick yard in Columbia, S. C., the damage amounting to several thousand dollars.

Tennessee

Johnson-Porter Clay Co. at McKenzie, Tenn., are operating their mines on full time, and are augmenting their force of labor.

The Standard Brick Co. has filed a charter at Memphis, Tenn., to buy and sell brick and other clay products. Its capital stock is $75,000. Frank L. Warner, Charles C. Brown, William L. Withers, Robert Bridges and George Harsh are the incorporators.

Washington

The Davie Brick Co., the Pioneer Brick Co. and the plant of A. T. Dishman, all of Spokane, Wash., have suspended operations temporarily.

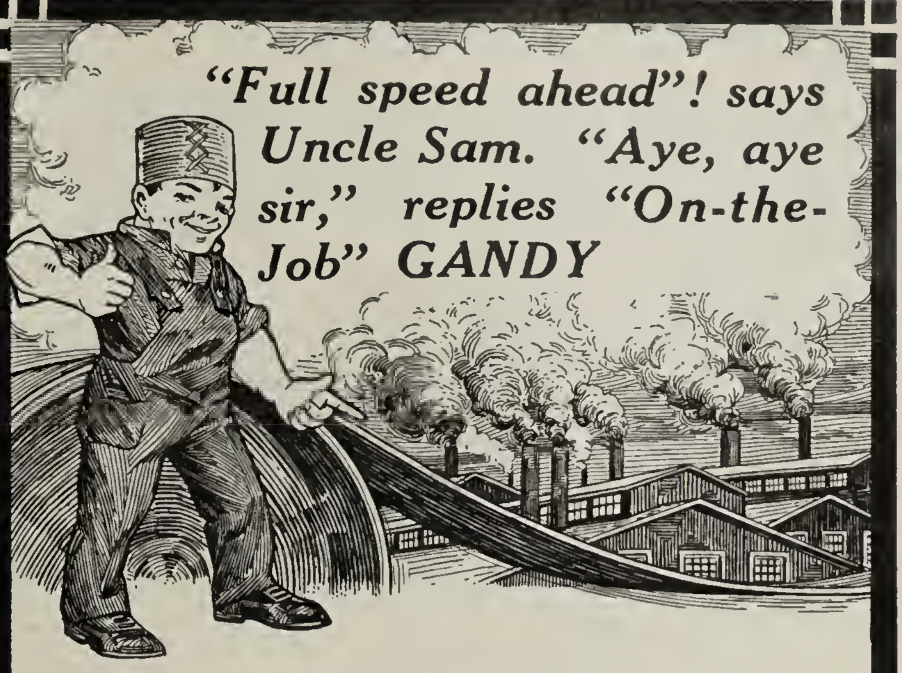
The Superior Brick & Tile Co. has been incorporated at Snohomish, Wash., with a capital of $25,000, by George W. Shaw, J. A. Weaver and George Miller.

O. N. Russell, superintendent of the American Fire Brick Co. at Mica, Wash., stated that his company will not feel the fuel restrictions inasmuch as fire brick is the principal product of the American company.

Inasmuch as fire brick is essential and will not be curtailed, according to the order of the fuel administration, officials of the Washington Brick, Lime and Sewer Pipe Co., Spokane, Wash., state that the curtailment order will not affect any of the company's plants under present conditions.

West Virginia

S. P. Puffer, Kanawha County fuel administrator, vigorously opposed the restriction placed on the clay products industries of Charleston, W. Va. by the Federal fuel administrator, in a telegram to J. Walter Barnes, West Virginia fuel administrator, which read: "Referring to order announced today curtailing manufacturers of clay products, the construction of buildings in Charleston in view of location of big government plants and housing difficulties is virtually essential to war activity, also local brick yards are continually furnishing brick to coal operators and this is necessary to


"Full speed ahead"! says Uncle Sam. "Aye, aye sir," replies "On-the-Job" GANDY

"They have chosen the sword, by the sword shall they perish."

Thus has America sounded the doom of autocracy.

It must not fall to the boys in blue and khaki to do autocracy to the death unaided.

You are called to get behind our armed forces with the necessary material and supplies.

"On-the-Job" **Gandy** comes to your assistance with a transmission belt that gets

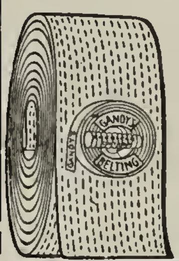
All the Pull From the Pulley

For maximum service and maximum economy the **Gandy** stitched cotton duck belt is without a peer.

Order today from your Mill Supply House, or home plant direct.

We are prepared to give you quick delivery of seasoned Belting.

Look for the painted green edge and *Gandy* trademark.



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New York Branch: 36 Warren Street

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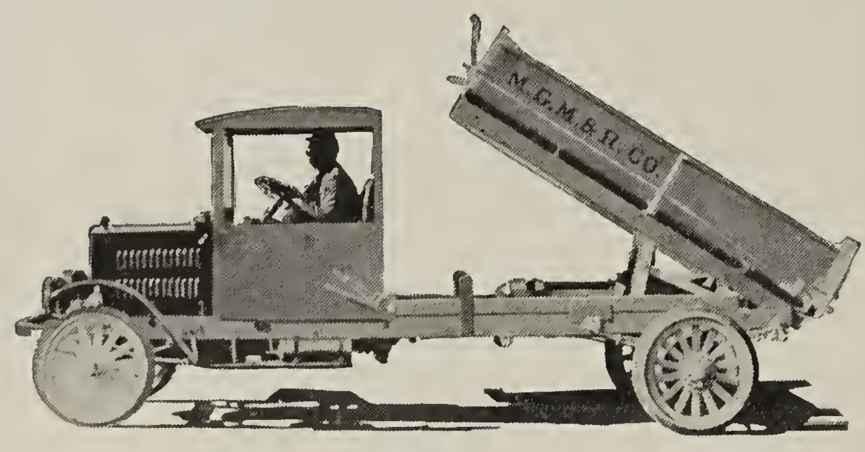
KISSEL
Five Sizes
TRUCKS

Built For Wartime Service

Meeting average haulage or delivery conditions is no great feat—even with average trucks—but **out of the ordinary** demands are what test the stamina of real truck construction.
It is here that Kissel Trucks give evidence of their real superiority and show the benefits of long experience in truck building.



The unusual strength of the Kissel Truck chassis—the advanced engineering principles of its structural features—its sturdy construction throughout—make Kissel Trucks fully equal to continuous service demands.
Compare the powerful Kissel-built motor—the special heat-treated frame—perfected worm-drive rear axles—reliable brakes and durable springs.
There is a model built to fit every transportation requirement in the brick and clay industry. Investigate now while your nearest Kissel Truck dealer can make an early delivery.

Kissel Motor Car Company
Hartford, Wisconsin, U. S. A.

KISSEL
With the ALL-YEAR Cab
TRUCKS

fuel production. Our production of brick has also been curtailed by the destruction of one yard by fire. This leaves three yards in Charleston district, all operating with fuel gas. Under these circumstances the Standard Brick Co., Kanawha Brick Co., and West Virginia Clay Products Co., feel that they should be exempted from terms of the order. I strongly urge that you take the necessary action." Charleston is at the very height of the largest building program in the history of the city and it is believed that a curtailment of the output of the three local plants will be a serious handicap to the progress of the city as well as a hinderance to the construction work at Nitro where several hundred new bungalows are now in course of construction. The clay products plants in the Charleston district are operated entirely by fuel gas.

* * *

National Research Council Comments on the Recent Fuel Order

"The primary reason for this order was for the purpose of economizing fuel and transportation," says Edward W. Washburne, chairman, sub-committee on Ceramic Chemistry, National Research Council. "In addition to this result, however, the curtailment of production in the ceramic products covered by the order should make it easier to increase the production of those ceramic products which are indispensable for carrying on the war. Altho the country can for a time adjust itself without great hardship to a decreased production of paving brick, drain tile, sewer pipe, sanitary ware, terra cotta and other building materials, its production of such articles as high grade fire brick and a great variety of other special refractory products; electrical porcelain; chemical glassware, porcelain and stoneware; optical glass; abrasives and grinding wheels; and enameled ware for ammunition factories, cannot be decreased but should rather be in many instances increased both in quality and in quantity. The skilled labor released thru the curtailment of production of the more common clay products should, as far as possible, be employed in plants manufacturing the above war materials.

"Where deposits of high grade fire clays or of ganister are available, manufacturers of common clay products having proper machinery, or who can secure such machinery, will doubtless in some instances find it to their advantage to convert their plants to the manufacture of refractory products. In some parts of the country manufacturers of sewer pipe, drain tile and brick will be called upon shortly to undertake the production of certain clay articles required by the government for a purpose which cannot be made public at present. Such conversions of manufacturing plants from their normal operation to the manufacture of war needs should, as far as possible, be coincident with curtailment in production of the less vital manufactured products. It is exactly what has occurred in the other warring countries and what we must expect to a greater and greater extent in our own country as the war continues. Manufacturers of a given class of clay wares ought, therefore, to consider the possibility of accomplishing the required curtailment not by running all of the plants on part time, but rather by running as many as possible at full capacity and converting the others wherever feasible to the production of ceramic products not included in the recent list of the Fuel Administration, all such products being therefore presumably of considerable importance for the successful prosecution of the war."

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

Pottery interests at Trenton, N. J., have been active in supporting the Third Liberty Loan, not only thru generous subscriptions both from companies and employes, but in using advertising space to encourage a hearty local support to obtain the quota for the city. Page space has been used in Trenton newspapers, headed "Why Buy Liberty Bonds?" and followed by convincing reasons for the purchase of bonds by every citizen. The companies engaging in this co-operative work are: Thomas Maddock Sons Co., Keystone Pottery Co., The Monument Co., John Maddock & Sons, The Bellmark Co., Sanitary Earthenware Specialty Co., Cochran, Drugan & Co., The Elite Pottery Co., Economy Pottery Co., Resolute Pottery Co., The Trenton Potteries Co., Acme Sanitary Pottery Co., and the J. L. Mott Co., the entire work being handled under the auspices of the Trenton Liberty Loan Committee.

Excavation for the foundation of the buildings of the West Coast Porcelain Co., at Millbrae, Cal., has been completed. Three thousand cubic yards of earth were removed. The building is to be 300 feet long by 50 feet wide and three stories high. The Southern Pacific is to build a spur track to the factory site.

A recent report from Mayfield, Ky., was to the effect that M. J. Dunnaway, of the Bell City Pottery, had been in the city, and made the statement that the new pottery would soon be ready for operation, and would turn out a class of white ware which will be hard to beat. Mr. Dunnaway stated that new machinery was coming in slowly, but receipts had been better and indications are for an early start.

The Manatee River Pottery Co., Bradentown, Fla., has been incorporated with a capital of $10,000 for the establishment of a plant for the manufacture of pottery from clay deposits along the Manatee River. H. S. Glazier, E. H. Hubbell, S. A. Bean, M. H. Ward, Bradentown, and K. McClellan, Sarasota, are the incorporators.

The three large potteries at Evansville, Ind., are being operated on good time and business for the past several weeks has been excellent. The outlook for summer and fall trade is good. The potteries in Southern Indiana have lost some men by the draft but up to this time the plants have not been seriously interfered with.

Possibility of the establishment of a pottery plant in the old Crayon factory at Port Clinton, Ohio, that would employ eighty people at the outset, is being considered by the Business Men's Association. Outside interests have commenced negotiations for the property but no details are yet given out.

The Rookwood Pottery line is being exhibited in a handsome window display at the Mulford Jewelry Co., Memphis, Tenn., who handle this pottery, an entire window being occupied by a green set of ware.

The Montreal Pottery Ltd. has been registered at Montreal, Que., Canada.

Munn & Shea, 6 Cuthbert Street, Montreal, Que., have the general contract for the erection of two kilns, costing $14,800, for the Montreal Pottery, at Montreal, Que.

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
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Your Dryer Fans

Must furnish a positively uniform flow of air under all conditions and at all times if you are to have the best results.

CLARAGE
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MULTIBLADE FANS

are exceptionally well adapted for clay plant work. They require very little space and the operating cost is low, but above all else, **they are absolutely dependable.**

These fans are furnished with Clarage Special Bearings entirely enclosed. This feature prohibits dirt and grit from entering and destroying the inner sleeves of the bearing.

A Clarage Multiblade Fan driven by a Clarage Steam Engine makes a very efficient unit. Write today for more information.

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HEATING, VENTILATING & DRYING ENGINEERS.
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MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers.

More Than Thirty Underwood Installations

A very remarkable tribute to the Underwood Producer Gas Burning System is contained in a recent announcement that more than thirty systems have been installed and are today working on American clay plants.

A list of the purchasers is in itself an acknowledgment of the claims made for this method of burning clay wares, and further convincing proof is contained in the knowledge that in quite a few instances the system has been purchased by neighbor plants, after close scrutiny of the original installation in that vicinity.

In almost every class of work the Underwood Producer Gas system is working successfully at all temperatures from 1,600 to 2,700 degrees Fahrenheit.

The variety of industries that have recognized the worth of the system is comprehensive and a point of pride. The application to updraft, downdraft, and muffle kilns has taken place in all of the following classes,—electrical porcelain, fire brick, terra cotta, roofing tile, Welsh quarries, paving brick, smooth and rough texture face brick, common brick, drain tile, hollowware and fireproofing.

This commendation given by the users is further supplemented by a Government investigation, instituted thru and by the United States Bureau of Standards in Pittsburgh, Pa. It was determined to make the investigation in order to satisfy the Government regarding the Underwood System and former hand fired methods. Improvement in method and economy were features investigated and the results published may be obtained in a booklet issued by the Government.

Such a system in these troublous times when coal and labor are needed so much by the Government, offers to the clay products industry an excellent way out, to serve both themselves and satisfy Government officials.

* * *

Trailers on Motor Trucks

The great increase in efficiency of a motor truck, that is accomplished by using a trailer is just beginning to be realized by clay products men.

Everyone realizes that a horse can pull more than he can carry, yet the same true principle has not been completely accepted by motor truck users.

Over in Detroit, Mich., the United Fuel & Supply Co. is using twelve Fruehauf trailers and is getting great results.

Mr. Henry T. Morris, superintendent of the motor service of the United Fuel & Supply Co., has the following to say about the use of trailers in connection with Packard trucks:

"We are using at the present time twelve (12) trailers, each with a capacity of six (6) tons.

"They are used almost exclusively for hauling brick directly from the brick plant to the jobs, an average round trip distance of seventeen (17) miles.

"Scarcity of railroad equipment has forced this method of delivery upon us and we have no comparative figures. We will venture to say, however, that if facilities for loading and unloading are good and the quantities to be delivered to a given point are great enough, a saving of both time and money can be effected. Good terminal facilities are of paramount importance.

One of the Twelve Trailers in Use by the United Fuel & Supply Company.

"We are using three (3) ton Packard trucks, converted into tractors, to haul our trailers.

"We haul three thousand five hundred (3,500) common brick to each load, thus overloading the trailer about one and a half (1½) tons. Our experience has proven a greater overload than this to be false economy, the cost of repairs more than offsetting the saving on delivery."

This record is very interesting, but it recounts only one of many similar instances where more load than a truck load, is carried by truck and trailers. The Fruehauf Trailer Co., of 1307 Gratiot Avenue, Detroit, will send whatever information you desire. It is desirable in writing that you enumerate your own conditions carefully.

* * *

Power Transmission Equipment

In a recent issue of "Hill Clutch Equipment," the magazine published by the Hill Clutch Co. of Cleveland, Ohio, there is a photographic story of the power transmission equipment of a new sugar mill.

Quoting from the accompanying article: Here are presented views of one of the plants erected last year to assist in assuring the country an adequate supply of sugar. The owner wishes not to be named, tho by no means ashamed of the property, which is a notable example of what is most thoroly modern in design, construction and equipment—including the Hill Clutch machinery for distribution of the power from a centrally placed steam engine having two flywheels, from which twin belts deliver power to twin pulleys on the main lineshaft."

If you are not now on the mailing list for the "Hill Clutch Magazine," it will pay you to send in your name, so as to receive regularly the help given in articles on power transmission equipment. It is free and no obligation is attached.

* * *

Brown Instrument Offer

In a series of card folders being mailed by the Brown Instrument Co., of Philadelphia, Pa., one of the startling statements made is that they will send an equipment of Pyrometers and Couples to you for a thirty days' trial, at their expense.

* * *

Westinghouse Employes Raise Two Millions for Liberty

A total of $2,144,800 subscribed by employes is the record of a ten-days' Liberty Loan campaign in the organization of the Westinghouse Electric and Manufacturing Co. With 30,384 subscribers from the company's various plants and district offices, the "bogie" set was largely exceeded by the total subscription figures.

Mass meetings at the noon hour addressed by four-minute speakers, recruited from the shop employes, were an important feature of the campaign. At one such meeting, held at East Pittsburgh works, several thousand people listened to Sousa's Band, and were addressed by Major Watt of the Gordon Highlanders. The Westinghouse and Scotch Kilties Bands played at other similar meetings.

"Proctor" DRYERS

They are the best dryers that can be built, both in design and in construction. They are so small and compact that the drying can be perfectly controlled.

Used by the Leaders

Consequently for refractory plants, for plants manufacturing high grade china, porcelains, insulating ware — and similar material, where cracks and checks are fatal, yet speed and thorough drying is required,—these plants find the Proctor dryer ideal.

The General Electric Porcelain Plant, the Harbison Walker and the General Refractories—all use them, and find solution for dryer difficulties. The ware is dried safely, yet thoroughly and speedily.

This is What You Want

Safe, quick, thoro and economical drying will be yours on your plant with a "Proctor." Write

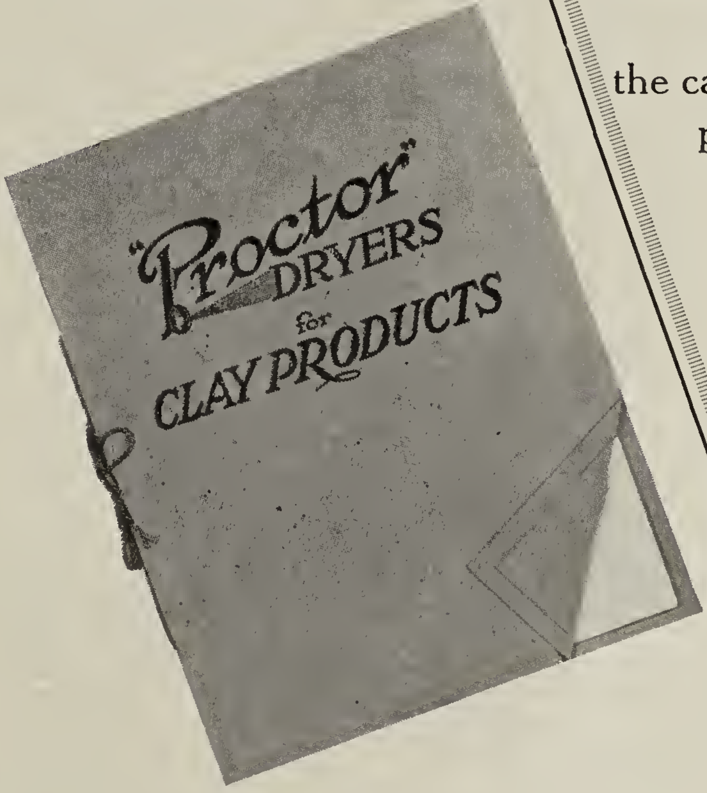
The Philadelphia Textile Machinery Co.
Sixth Street and Tabor Road
Philadelphia, Pa.

Your general information on dryer practice that is modern, will be increased by a study of our catalog.

We are glad to send it to you.

Just Ask.

Remember, if you have the will, the catalog points the way.



HOW TO MAKE THE FARMER BUY MORE DRAIN TILE

You sell to him, or to a group of his neighbors, or to a tile ditching contractor, or to yourself

A Buckeye Trench Excavator

The difficulty that confronts the farmer and the drain tile manufacturer is a lack of labor with which to dig the ditches.

It is your necessity to buy for your immediate territory a Buckeye trencher, so that the labor problem will be eliminated.

Then—the farmer buys and you sell your output to capacity.

The Buckeye Traction Ditcher Company
Findlay, Ohio

Get our Plan

Due to the general enthusiasm and particularly to the efforts of the campaign committees, many departments were able to display "100 per cent." signs; where one or two persons hung back, the force of public opinion quickly brought them into line.

About 1,200 of the company's women employes marched in the Liberty Loan parade in Pittsburgh on April 29, banners designating their work, and were accompanied by both the brass and bagpipe bands.

* * *

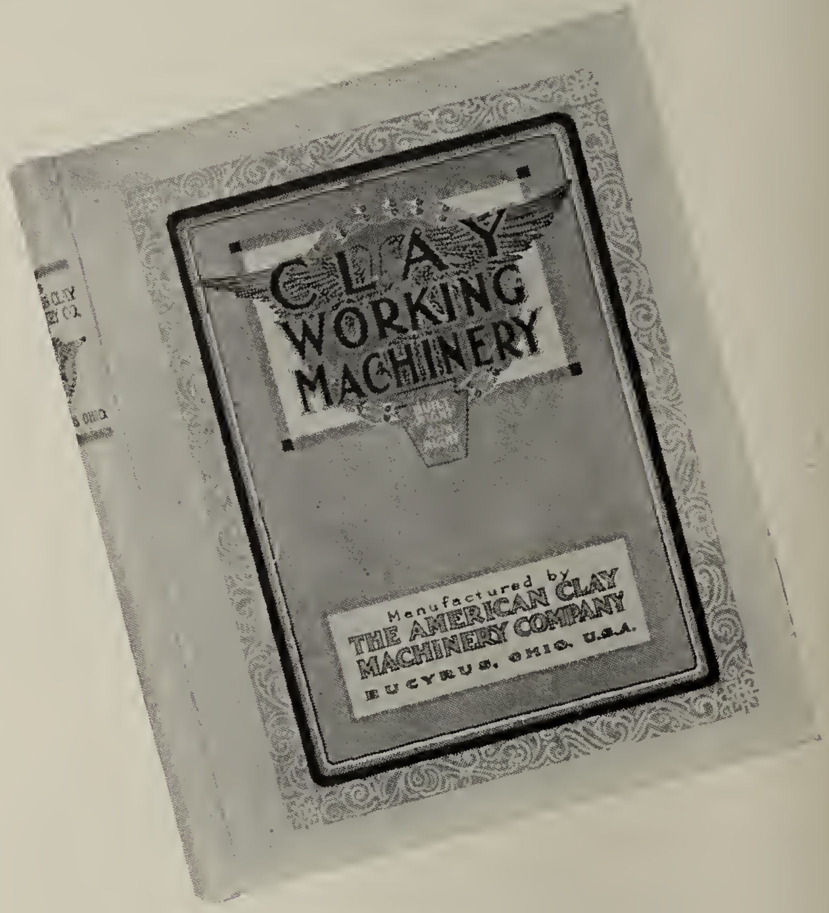
New American Clay Catalog

The new catalog just published by The American Clay Machinery Co., of Bucyrus, Ohio, is perhaps the finest and surely the largest ever published on the products of a company catering to the clay industry.

It contains in one volume more specific information about manufacturing clay products than is ordinarily found in a set of books; and because of this text-book value it takes on a real value for all clayworkers, whether users of American machinery or not.

For the Superintendent, it offers a way to become thoroly familiar with methods of construction, and because of the many forms shown, it suggests new ways to do things on your own plant and with your present equipment.

For the young man it may be used as a text-book, as the volume of information given is without taint or prejudice, but for all, for everybody, it is an encyclopedia of Machines, Engineering Service, Kilns and Plant Plans such as is assembled in no other volume.


CLAY WORKING MACHINERY
Manufactured by THE AMERICAN CLAY MACHINERY COMPANY BUCYRUS, OHIO, U.S.A.

An "Encyclopedia" of Information Regarding Clayworking Equipment

* * *

The Clarage Fan Co. of Kalamazoo, Michigan, announce that they have removed the offices of the Chicago branch to Room 1666 of the Conway Building, at 111 W. Washington Street.

Gardner Thomas is in charge of the office, and expects to be busy installing Clarage Fans and Blowers on clay plants.

* * *

Bulletin No. 241, containing listings of track, small locomotives, etc., has just been issued by Zelnicker of St. Louis.

BRICK
and
CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Halt the Hun with War Savings Stamps

The EDITOR'S CORNER

Get Busy With Your Dealers

THERE IS ONE FACT that we must look straight in the face and that is car shortage this year is not going to be any less than it was last. This is a self-evident fact and needs no argument to demonstrate its existence, to the truth of which many of our readers can no doubt testify after having suffered untold inconvenience, delay and disappointment in attempting to get cars to move finished clay products.

Many clay products manufacturers employ dealers or retailers in their distribution scheme. It is in this connection that we believe something can be done to overcome the difficulty of getting ware on the ground for a job when it is needed—which difficulty undoubtedly exists at the present time, particularly when material is being shipped direct to the contractor or consumer.

We have a summer before us. It is the time of all times of the year when operating conditions on the railroads are ideal. There is no snow and ice to delay traffic or to slow up the movement of freight. More car miles can be obtained from equipment during that season of the year than at any other time. Last August, for instance, car shortage reached its lowest point during 1917.

We believe that June, July and August ought to offer big opportunities for moving clay products from the factory to the dealer's yard. Heavy grain movements usually begin the first of September and last thru October, making it more difficult to get cars during those months. Therefore, we say that June, July and August ought to offer a good opportunity to move clay products where cars are available. Furthermore, there will undoubtedly be a large increase in freight rates in the near future, so that anything that can be shipped before these new rates go into effect will be that much money saved.

Why not get in touch with your dealers and point out the situation to them, namely, that they are bound to get a large amount of business during the coming months in drain tile and hollow tile, also brick and sewer pipe. In the face of this prospective business, they must have material on hand to supply the needs of their customers so as not to take a chance with car shortage in September and October when many farmers will be able to erect buildings and tile land after the busy months of July and August. Further, brick and sewer pipe will undoubtedly be needed for housing projects as they develop during 1918.

The dealer, we believe, will see the wisdom of judicious stocking up during the coming months in anticipation of this business if you will put the proposition up to him. Write your dealers a letter setting forth the facts in the case. It is as much for their benefit as for yours for them to follow out this plan. It is a mutual benefit proposition. If their credit is good you can take their trade acceptance for thirty, sixty or ninety days where such a course would be wisdom.

Get in touch with the trade paper your dealers read and write to the editor suggesting an article along the lines above set forth.

Get busy with your dealers!

* * *

A Ray of Hope

EXAMINATION of the building permits issued in one hundred and sixteen cities of the United States during April show a decrease of forty per cent. as compared with the corresponding month of last year. However, the ratio of decrease is the smallest of any month for the present calendar year. On the same basis of comparison, that is, with the corresponding month of last year, January permits decreased forty-six per cent.; February permits forty-four per cent., and March permits fifty-five per cent.

It is also noteworthy that the estimated cost of building is showing a steady gain, being $26,889,082 for January, $29,074,332 for February, $38,044,182 for March and $51,296,161 for April. Most of the gains shown in different cities are due to special construction connected in some way with the war. In fact, the bulk of building under way or projected is of essential character, and while, of course, not all is due to war needs, a surprisingly large percentage, if analysis were possible, would be found to be in some way connected therewith.

* * *

10,000 More Silos for Indiana

THE NEWS HAS COME that Indiana is going to build ten thousand silos in 1918. No such campaign has ever before been launched. The State Council of Defense, State Committee on Food Production and Conservation, the Extension Department of Purdue University, county agricultural agents, farm and daily press, builders of various types of silos, hundreds of farmers, bankers and merchants have united to make possible in one year what in normal times would be viewed as a program requiring years for its completion.

The campaign is to be conducted under the general direction of Maurice Douglas, of Flat Rock, the state silo leader. All of the ninety-one county agents of the state have perfected county and township silo organizations to insure that there shall be no silo slackers—that the campaign will be a success. Work in each county is directed by the county silo leader and local silo leaders for each township. The state silo leader and his advisory board have designated the quota of new silos to be built in each county according to the volume of dairying and stock raising in each.

Indiana is saying, "If you can't put a gun on your shoulder, put a silo on your farm." In Indiana, at least, the war will be fought in one more place—the corn field.

This situation presents an unprecedented opportunity for the manufacturer of burned clay silo tile. Ten thousand silos is a neat order for manufacturers of silo material. Naturally, no one material will be used. The business will be well distributed. To the manufacturers of silo material who do the most hustling and show the most initiative, will undoubtedly go the bulk of the business. It is sincerely hoped that manufacturers of burned clay silo tile will not be caught asleep as opportunity knocks on their door. It seems to us that they should get exceedingly busy to pick off a large number of the plums.

No restriction to date has been made on the manufacture of silo tile. In its order covering the curtailment of fuel to the manufacturers of hollow building tile, the United States Fuel Administration, in defining the term "hollow tile," says that it is "to cover all forms of fireproofing and hollow building brick, *except silo tile,* which are used in the erection of floors, roofs, partitions, and for other constructional purposes, made by any process whatsoever." Therefore it will be seen that there is no hindrance to unlimited production of clay silo tile where the market is prepared to absorb it.

What Indiana is planning to do can be done in other states. You clay tile silo manufacturers who do not transact any busines in that state, don't "sponge" on Indiana. If you would like to see such a movement started in your state, why not get busy yourself and confer with those who are in authority? A movement such as has been started in Indiana is likely to spread. It only needs a few men with a large vision to get the ball rolling.

* * *

Additional Evidence of Burned Clay's Part in U. S. Housing Program

ON ANOTHER PAGE of this issue is printed the news that the unfair and discriminative specification against vitrified glazed sanitary sewer pipe, written by Lawrence Veiller, secretary of the National Housing Association, as a part of the government's standards for war housing, has been changed so that burned clay may be used as an alternate to wrought and cast iron pipe.

This is certainly welcome and encouraging information. It comes as a result of a strenuous and vigorous protest by the manufacturers of vitrified glazed sanitary sewer pipe against the specification in question. We are happy to note that the burned clay sewer pipe manufacturers were on the job and when this specification was made public about a month ago they jumped to arms.

Also it has been agreed by the proper parties at Washington that "fire clay flue lining" will be specified where only "flue lining" is now mentioned in the specification.

The news that vitrified glazed sanitary sewer pipe is to receive fair play at the hands of the government, and that fire clay flue lining is to be used, is additional evidence of the important part which burned clay is destined to play in the housing of the nation's industrial workers.

It is good tonic for the pessimist. It will drive away his blues.

ATTENTION, PLEASE! Have You a Star in Your Service Flag?

It has been suggested that *Brick and Clay Record* publish a list of all those connected in any way with the clayworking industry who are now in the service of "Uncle Sam." We are glad to do this and would ask that you, Mr. Reader, please send us the name of your son, brother, business associate or employe who is now doing war work in any capacity. We will publish the names sent in to us

IN NEXT ISSUE

Lick a War Stamp and the Kaiser, Too.

CLAY PRODUCTS MEN C

Uncle Sam's Program for Increased Agricultural P
ity to Perform a Patriotic Duty as Well as Further I
General Realization That Clay Products Are Mor

By

AT FIRST GLANCE it might appear that there was very little in common between the business interests of clay products men and the movement for food production which is being planned for the fiscal year beginning July 1, 1918. To be sure, every citizen, and each member of the clay products contingent no less than the rest, is interested in any project having to do with foodstuffs that is likely to be translated into terms of bounty or sufficiency for his own dinner table, but it might not be readily apparent that there is a bond between organized food production and constructive effort in the clay products industry much stronger than that prompted by any such considerations of personal comfort.

As a matter of fact, the program for increased agricultural production which the U. S. Department of Agriculture is to launch next month affords members of the clay products industry a unique opportunity to perform a patriotic duty and at the same time further their own legitimate business ends. Or at least, this intensified effort on the part of Uncle Sam to work up to 100 per cent. efficiency in the sphere of rural industry affords opportunity to bring about a general realization that clay products are more of an "essential" than some people in authority have supposed.

CLAY PRODUCTS' PART

The newest war-time project that seems to signal quickened demand for clay products—if only clay products men will seize time by the forelock and prove to all comers the importance of such utilities—is not a brand new undertaking. Last August, Congress made the initial move for systematic effort on the part of the Government "to further the national security and defense by stimulating agriculture and facilitating the distribution of agricultural products." At that time the new venture was, of course, something of an experiment and so the national legislature provided funds sufficient only to carry the work up to June 30, 1918. Meanwhile the new effort to speed up farm output has made good and as this is written Congress is considering the recommendation of the Committee on Agriculture for increased appropriations to carry on this vital "missionary work" on an enlarged scale during the year that will end June 30, 1919.

It is just here that the interests of the clay products industry come in. The new and expanded program takes cognizance of the value and importance of drain tile, sewer pipe, silo material, etc. as aids to agriculture and to a certain extent it commits the federal "farm annex" to investigations and experiments that may be counted upon to yet farther prove to the rank and file of farmers that war or no war and regardless of whether prices are high or low it behooves the tiller of the soil to provide the agencies that will, for instance, conserve water where he wants it and facilitate the removal of water from localities where he does not want it.

Talking recently with various officials of the Department of Agriculture with respect to their present and prospective "war campaign" the thought impressed me that probably few clay products men realize in how many minor ways the war situation is playing into their hands. For instance, the officials expressed gratification over the success of their campaign to persuade poultry raisers to preserve eggs for winter use at home. The use of crocks and similar receptacles is an essential detail of "putting down" eggs for winter use and I am told that thousands upon thousands of pieces of crockery have been put to this use this past year by families that never heretofore "bothered" about such conservation. It is indeed, part and parcel of that same sort of a domestic "thrift" campaign that is stimulating the demand for jugs for vinegar, clay containers for apple butter and other home-made preserves, etc. Something in the way of an "educational campaign" by clay products interests directed to impressing housewives with the advantages and economy of receptacles of this class should prove at this juncture seed sown on fertile soil.

Perhaps the most significant single factor in the Government's new program as affecting the sale of clay products to rural consumers is found in the determination to continue unabated all the work heretofore in progress with respect to farm drainage. The experts in the Bureau of Rural Engineering are to have fresh funds to enable them to push forward study of the problems of designing tile drains, including depths, spacings, arrangements and sizes best suited to the various conditions of soil, climate and topography. When some additional data has been secured on the capacities of drains the Department of Agriculture is to issue a report on this subject, meanwhile continuing the measurements to determine the effect of drains upon the groundwater table.

USE OF DRAIN TILE DEMONSTRATED

A line of work that it is planned to extend in the coming twelve months and that must obviously redound to the benefit of the clay products industry is found in what are known as field demonstrations of tile-drain construction. For some time past, county agents of the Department of Agriculture have been giving in various parts of the county what might be termed informal demonstrations of the proper use of drain tile. A few months since, however, there was evolved at the State College at Athens, Georgia, what has been hailed as a "better way." This consists of a series of five lectures and five field demonstrations covering all phases of the utilization of tile for drains. It is now planned to follow this more systematic demonstrational plan so far as

Thrift Stamps Lead to Independence.

NLIST *for* FOOD PRODUCTION

Affords the Clay Products Industry a Unique Opportun-
itimate Business Ends and Will Help Bring About a
ntial Than Some People in Authority Have Supposed

cett

possible in 1918-1919 in carrying the gospel of drain tile utilization to the farmers.

Welcome to clay products men, as in the interest of standard specifications and conducive to accuracy by consumers in placing orders for drain tile, etc. is the $10,000 a year "Run-off Investigation" whereby Uncle Sam is attempting to determine accurately the rates of flow for which provision should be made in planning drainage improvements and of the size of channels necessary to accommodate the flow. The Government's studies of the depreciation of drainage works and especially the investigation as to the durability of drain tile are obviously likely to yield practical hints for the improvement of the product. Incidentally it may be noted that clay men who have felt or expect to feel the competition of cement drain tile may deem it worth while, for the sake of obtaining "selling points," to keep close watch upon the outcome of the investigation of cement drain tile which is now under way by specialists of the Bureau of Rural Engineering.

IN SOME PLACES DEMAND EXCEEDS SUPPLY

Speaking the other day of the extent to which the farmers of the country are maintaining and even increasing their interest in drainage projects, Director L. W. Page of the Bureau of Rural Engineering said: "There has been a slackening in the drainage district work, but the work of the farmers is much heavier. In fact in our advisory capacity we have had more work than we could care for promptly. Forty per cent. of the drainage engineers have joined the army and it has been difficult to get other engineers. I am informed that for all that drain tile has increased in price, say 30 per cent. the manufacturers in some localities have not been able to keep up with their orders."

Director Page went on to relate what an important work the Department is doing and planning to do in encouraging the farmers to undertake systematic drainage and to thereby get more land under cultivation. Said he: "If a farmer desires to drain his wet lands we undertake to furnish a man from the Department to do the surveying, etc. in localities where tile drainage is not understood. We assist the farmer in getting the work started where he is inexperienced in this kind of work. Frequently a single small farm will be the beginning of drainage work in a community or of a drainage district, where a number of farms are combined together to get rid of a volume of water. In a great many cases one farmer drains his land by turning the water over on the other man's land and in order to avoid this the formation of districts is necessary. We have during the past twelve months done work in about thirty states in the humid region, but even in the arid states drainage is necessary where too much irrigation water is used on the lands and the lands become waterlogged. Then it is a question of drainage."

USE GOVERNMENT DATA TO STIMULATE DEMAND

While the Department of Agriculture is going to do much, automatically as we might say, during the next year, to stimulate demand for clay products of the classes essential for farm drainage operations, there appears to be no reason why pipe and tile men should not make a little more effective use than they have in the past of the advertising ammunition with which the Government is providing the trade. A few months ago, for example, the Department issued a Farmers' Bulletin on the subject of surface irrigation for farms, that contains many statements that might advantageously be quoted in the sales letters, circulars, advertising literature etc. of sellers of clay products and yet the great majority of men in the trade appear to have never heard of this booklet or at least have not "lifted" any of the testimonials it contains.

In other lines of trade shrewd advertisers make the most of Uncle Sam's endorsement for their wares whenever such approval is obtainable and it would appear that clay products men are overlooking some moves in the game. As samples of the advertising "copy" for which Uncle Sam is ready to stand sponsor there may be cited at random the following quotations: "A durable and comparatively cheap distribution system may be constructed of terra cotta sewer pipe, usually called salt glazed vitrified clay pipe"; "This pipe can be laid by anyone who follows directions carefully"; "None but the best grades should be accepted when sewer pipe is bought"; etc. etc.

BRICK AND TILE ALSO BOOSTED BY UNCLE SAM

While on the subject of the trade turning to account all the selling "ammunition" that the national Government provides, it may be well to remind brick and tile men generally that Uncle Sam is all the while preparing working drawings for farm buildings that call for the use of brick and clay products and these plans or rather blue prints are available for distribution, so that a prospective customer who hesitates to buy building material may on occasion be "brought around by the expedient of supplying him free of charge with the approved plans put out by the Federal architects and of which he may never have heard unless the marketer of clay products brings these drawings to his attention. An indication of how Uncle Sam is thus "rooting" for clay products is found in the circumstance that within the past few months the specialists at the Department of Agriculture have prepared working drawings for a one-story hollow-tile dairy barn, a hollow-tile general barn for use in connection with the dairy barn and typical drawings for a brick silo. Incidentally it may be noted that the continual boosting of insurance rates on frame structures in the rural districts is leading more and more farmers to give serious thought to

A Thrift Stamp a Day Keeps the Huns Away.

the alternative forms of construction that enable them to cover their risks at more moderate premiums.

* * *

Cleveland Employes on Strike Hit Government Work—U. S. Officials Take Hand

Following the appeal of employers and representatives of brick and other material interests, A. L. Faulkner, federal mediator, has taken a hand in the strike of building trades employes, in which 20,000 workers now are affected. Prior to May 1 it was freely predicted by leaders of the union factions that for patriotic reasons there would be no strike of building trade workers. It was on May 1 that wage agreements in many crafts expired. As has been stated before in *Brick and Clay Record,* the Cleveland employers resolved to stand pat on demands made to them, and under present conditions were considered justified in not agreeing to new demands. Since then certain crafts have gone out, and others have followed.

The move by federal authorities in the controversy is the outcome of an appeal by Samuel Scovil, chief of ordnance bureau in Cleveland, to the effect that the strike is affecting the production of munitions of war. According to Mr. Scovil, several plants engaged in government contracts are not able to make production because new addditions to their plants are not being completed. Following a conference called by Mr. Faulkner between union heads and employers, it is believed the workers will be asked to vote on returning to work on buildings where government work is held up. It is understood the workers have been urged to return to these jobs by their leaders.

While wage demands this year are as important as last spring, it is claimed in union circles that the principal objection of the workers is to the famous "ten cardinal principles," which the employes claim the employers forced upon them, and which they claim the employers seek to force upon them this year. This feature now seems to have taken paramount importance as the month advances.

In spite of these untoward conditions, prices on brick and other clay products entering into building construction in the Cleveland district are now on the upgrade. Already common brick has advanced and higher figures are predicted on face brick. According to John Harms, of the American Face Brick Co., face brick will soon advance on an average of $2 to $4 per thousand, owing to the shortage of cars and the scarcity of competent labor.

J. J. Shea, assistant sales manager of the Barkwill-Farr Co., advises higher prices on common brick already. Hard brick is now $14 and kiln run brick has advanced to $12.50 for regular city sales. F. o. b. cars from Cleveland are $12.25 per thousand.

* * *

Ohio Paving Brick Men Confer

The orders of the federal Fuel Administration reducing the coal consumption of brick plants to 50 per cent is working quite a hardship on all plants in Ohio but more especially on the paving brick plants. As a result, a conference of paving brick manufacturers was held at the Hotel Gibson, Cincinnati, early in May to take steps to get along under the reduced coal allowances. It was stated at the conference that the production of paving brick during the first four months of 1918 showed a decided slump over the corresponding period in 1917. This was attributed largely to lack of transportation, labor shortage and lastly to reduction in fuel allowance.

To comply with the order of the Fuel Administration it is necessary for plants to run on half time or on full time for only six months in the year. Sentiment favored the working out of plans in territories where manufacturers may cooperate in using only such amount of fuel as is permitted by the government, and supply the business requirements in respective sections. F. D. Dunn of Conneaut, Ohio, presided at the meeting.

* * *

State Organization for Maryland Clay Men

There is a strong probability that an organization of brick and clay products firms will be formed in Baltimore in the near future. Strange to say, no such organization exists at the present time. In view of the fact that the clay products interests form a not inconsiderable part of the state's industries and that some firms can look upon an existence of more than fifty years, this is a remarkable state of affairs. However, with the importance of the industry growing daily, with numerous governmental regulations beginning to vex the souls of the sellers of clay products, the necessity for an organization which shall have authority to represent the firms in their dealings with the government and otherwise, is rapidly being realized.

Interviews with a number of men prominent in the industry, reveals the fact that tho the forming of such an organization is still in the talking and debating stage, it will not be long before something practical in the shape of a state organization will come of it.

The brick and clay men are fairly prosperous in Maryland, in spite of the fact that building operations have become greatly decreased, partly because of the voluntary cessation from building by individuals on account of high prices, and partly because of the reduction of clay products output by the government.

But Maryland has a number of military camps, the largest of these being Camp Meade, located at Admiral, housing about 40,000 boys in blue and about 30 miles distant from Baltimore. It also seems probable that brick will be used to a much larger extent than formerly in the building and repairing of roads. Maryland's beautiful roads, built at the cost of many millions of dollars during recent years, have been sadly cut up and, in part, destroyed by the heavy army trucks, which in convoys of about eighty trucks, have been coming to Baltimore in an incessant stream, from Buffalo, Pittsburgh, Cleveland, Detroit and other western cities.

The need of a state organization to look after the interests of clay products manufacturers is obvious.

* * *

Dutch Building Materials Company

There is a proposal on foot to establish a limited company with a capitalization of 1,500,000 florins ($603,000) for the purchase and control of all kinds of building materials. Apparently this company which will be called the Central Building-Material Supply Co., Ltd., will endeavor to control the market in cement, lumber for building, as well as street paving materials and sewer pipe materials for the purpose of providing for the most important requirements of the larger municipalities. The municipalities of The Hague, Amsterdam and Rotterdam, and the Association of Communes will each subscribe 350,000 florins ($140,700) and the municipality of Utrecht will supply the remaining 100,000 florins ($40,200). One-tenth of the capital must be paid up as soon as the concern is organized.—*Commerce Reports.*

Save for Yourself and Your Country.

OIL *as a* FUEL *for* BURNING WARE

This Article Has Been Written for the Benefit of Manufacturers Who Are Contemplating the Installation of Oil Systems, and Deals With Some of the Problems With Which They Will Be Confronted. The Author's Experience Includes the Installation of One System; the Operation of Another; the Examination of Several Other Systems and the Determination of Their Operating Costs

By Frank H. Riddle, Cr. E.
Pittsburgh, Pa.

THERE HAS BEEN considerable information published on the use of oil as fuel, but not a great deal that has dealt directly with the details of burning ceramic products, such as salt glazed sewer pipe, brick and similar ware. Fuel oil has a great many advantages over coal for burning clay products. The vital point to consider, of course, is how available the fuels are. If they are both procurable, the relative price must be considered. There are a great many other things that also should be considered in arriving at a comparative price, that are not apparent at first.

1. In figuring the relative price of the fuels, the comparison should take into consideration the quality of each one, its heat value, the amount of sulphur, moisture, etc., that it contains. This determination should be made by a disinterested fuel engineer of experience. The relative heat value of coal and oil can be determined as follows: Suppose the coal being used has a heat value of 12,500 British thermal units per pound. The oil to be compared to the coal has a heat value of 21,000 B. t. u. and weighs 7.7 pounds per gallon. How many barrels of oil have the same heat value as a ton of the coal?—

$$\frac{12{,}500 \times 2{,}000}{21{,}000 \times 7.7 \times 42} = 3.6 \text{ barrels of oil.}$$

By a B. t. u. is meant the amount of heat required to raise one pound of water one degree Fahrenheit from 39.1 deg. to 40.1 deg. Fahr. The total number of heat units (B. t. u.) in one pound of oil varies from 18,000 to 22,500, and will average 21,000 B. t. u. for California and Texas crude oil, but should be definitely known when making a comparison.

COMPARATIVE EVAPORATION TABLES.

The following comparative evaporation tables taken from U. S. Geological Survey Reports, show the amount of oil required to do the same amount of work as several grades of coal. This comparison is better than that of B. t. u.'s, as it takes into account the coal wasted in the ashes, etc.:

One Pound of Combustible	Lbs. of Water Evaporated at 212 Deg. per Lb. of Combustible	Barrels of Petroleum Required to do Same Amt. of Evaporation as One Ton of Coal
Petroleum 18° to 40° Baume	......	....
Pittsburgh lump and nut, Pa	10.0	4.0
Pittsburgh nut and slack	8.0	3.2
Anthracite, Pa	9.8	3.9
Indiana block, Ind	9.5	3.8
New River W. Va	9.7	3.8
Georges Creek lump, Md	10.0	4.0
Pocahontas lump, W. Va	10.5	4.2
Cardiff lump, Wales	10.0	4.0
Cape Breton, Canada	9.2	3.7
Nanaimo, B. Columbia	7.3	2.9
Co-operative, B. Columbia	8.9	3.6
Greta, Wash.	7.6	3.0
Carbon, Hill, Wash.	.76	3.0

2. Next, is the possible supply and means of transportation. In many instances this is of primary consideration. If the fuel oil is just beginning to be used, in a new market, and experiments are being carried on by other possible consumers, there is very apt to be a tank car shortage, resulting in serious delays. This should be avoided. It is true that fuel oil requires much less storage space than coal does, but it is also true that the space must be a tank or reservoir. In most cases the cost of this tank is considerable, and there is a strong temptation to make it as small as possible and then worry and hope that the car supply will be regular enough to prevent a shortage.

USE OF TANK CARS

If your coal bunkers are small, it is possible to pile your coal right on the ground, and if there is a scarcity of gondolas, box cars or even cattle cars can be used to tide over the shortage. The only car for oil, of course, is a tank car. In certain cases this is a distinct advantage, as a tank car can be used for nothing else. In general, however, the car question is in favor of coal.

Editor's Note—A very comprehensive article on burners, entitled "The Principles and Design of Ceramic Burners," by Professor Carl B. Harrop, appeared in the April 23, 1918, issue of "Brick and Clay Record."

A Sign of the Times: W. S. S.

In certain parts of California where oil is used extensively, and the factories are close together, a pipe line is installed from the pumping station to the plants. This, of course, is ideal, as a phone call will bring oil at short notice. For this method of delivery each consumer must have two tanks, so that he can be using oil from one tank while the other is being filled. Meters are not used for measuring oil in this case, but actual volume of the tanks. This measuring will be discussed under specifications for fuel oil.

Battery of Four Rectangular Down-Draft Kilns 16x72 Ft. Inside, Using Fuel Oil, Equipped With Balance Draft. The Round Kiln in the Foreground Is One of Several 36-Ft. Sewer Pipe Kilns.

Some plants are fortunately located where they have plenty of room and clay-like soil, thru which oil will not penetrate. In this case the oil receiver can be an ordinary reservoir with a clay dam around it, and a roof over it. Actual experience with tanks of this sort show they are practical.

PLANT AND EQUIPMENT

3. The third item governing comparative cost is that of plant and equipment; and, in the case of oil, it means a rather large investment as compared to that required for coal. Where coal is used, elevators and bunkers are a saving in distribution, but they are not positively necessary. In a great many cases grate bars are not even used. Many plants do not have fire-box doors, but they should have for economical operation and are wasting fuel when they do not use them.

The use of fuel oil means a considerable investment for storage, pumping, distribution pipes, burners, atomizing agents, etc. The atomizing agent may be either air or steam, but in either event will require more boiler capacity and power than is used when coal is being burned. Their comparative values are worth considering.

COMPARATIVE LABOR COSTS

4. This comparison varies widely, and it is difficult to make a definite general statement. The labor for oil firing is much less than for coal firing, and the quality of work is so much better that it is possible to get higher grade men for handling oil than coal, in small plants. In large plants where the head burner is relieved of routine labor, this does not apply. In general, one man will take care of an 18-kiln plant at night, and a burner and helper in the day time; the helper to take care of cleaning burners, tearing out wickets during cooling, etc. When three shifts are the practice, as is now being done very successfully in several localities, one more man is required for the third shift. The better quality of ware burned will, in most cases, warrant the extra expense of operating three eight-hour shifts. This is true not only for oil, but also for coal. The labor cost of handling coal and ashes is greater than the labor cost of handling oil, but the cost of pumping and atomizing oil is much higher than is generally thought to be the case. This is discussed at length below.

The per cent. of No. 1 ware, its quality, and the speed at which the kilns can be turned over, are points very much in favor of oil. They do a great deal toward counter-balancing the high cost of installation. When oil is being considered for a new plant, the cost of installing the system will be largely counter-balanced by the saving due to building fewer kilns. When being considered on an old plant, the increased production of the kilns should be considered, especially if the rest of the plant is of sufficient size. If, however, the kiln capacity was previously larger than the shop, this point would not be of as great importance.

Summing up all the points is the only way to get a real comparison, and the cost should be made on the basis of the value of the production from each square foot of kiln floor space per day, and the cost of burning this amount of ware. This immediately takes into account the increase or decrease in production and quality of ware, as well as just the cost of burning a unit amount of ware, regardless of quality or time. This cost should also include a fair charge for depreciation and repairs in each case.

In building a new plant the more that is known of these points in advance, the better; and an investment of a small amount to secure reliable information is money well spent and may save serious losses later on.

SPECIFICATIONS FOR THE PURCHASE OF FUEL OIL

The Government buys fuel oil in the same manner that it buys coal; i. e., according to its heating value. Altho this may not be entirely practical for small plants, it would be much more satisfactory to all concerned if the method was more widely used. For a complete set of the specifications, see Technical Paper No. 3, Department of the Interior on "Specifications for the Purchase of Fuel Oil, With Directions for Sampling Oil and Natural Gas."

There are several points that should be understood in purchasing fuel oil. The following portions of the government specifications are of particular interest:

(2) "Fuel oil should be either a natural homogeneous oil or a homogeneous residue from a natural oil; if the latter, all constituents having a low flash-point should have been removed by distillation; it should not be composed of a light oil and a very heavy residue mixed in such proportions as to give the density desired.

This Burner is in General Use in Ceramic Plants. Note Plug Which Can Be Taken Out for Cleaning.

(3) It should not have been distilled at a temperature high enough to burn it, nor at a temperature so high that flecks of carbonaceous matter began to separate.

(5) Its specific gravity should range between 0.85 and 0.96 at 15 deg. C. (59 deg. Fahr.); the oil should be rejected if its specific gravity is above 0.97 at that temperature.

(8) It should have a calorific value of not less than 10,000 calories per gram (18,000 B. t. u's. per [illegible]); 10,250 calories to be standard. A bonus is to be paid or a penalty deducted according to the method stated under Section 21, as the fuel oil delivered is above or below this standard.

(9) It should be rejected if it contains more than 2 per cent. water.

(10) It should be rejected if it contains more than 1 per cent. sulphur."

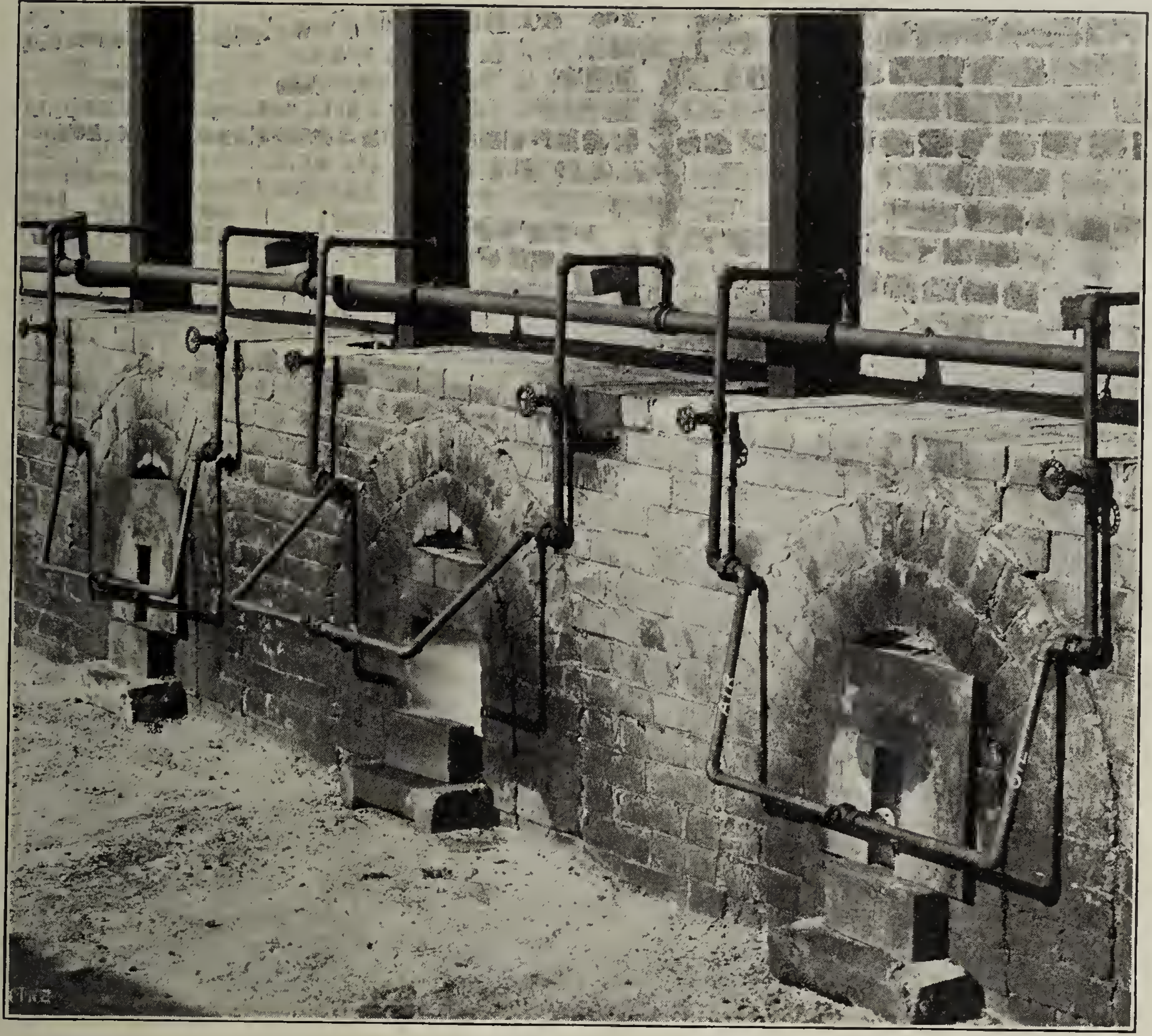


Fig. 2. Cut Shows an Air Inlet Hole at the Top of the Box Which Allows Cool Air to Go in Just Under the Arch, Which Helps to Keep the Arch Cool and Prevents Its Burning Out.

A great many contracts for fuel oil simply state that the oil shall be of such and such gravity and contain not over 2 per cent. of water. The fuel oil used in Southern California is usually specified as 16 gravity Baume; i. e., has a specific gravity of .959. It is unusual when the contract states that the temperature must be 15 deg. C. (59 deg. F.). This is very important and should be stated on account of the large co-efficient of expansion of oil. The co-efficient of expansion of ordinary fuel oil residues of asphaltic base is approximately 0.0006 per 1 deg. C. At that rate, if you received a tank car containing 240 barrels of oil at the correct temperature, but it had to be heated up to 86 deg. Fahr. to make it run out of the car easily, you would show a measurement of 242.16 barrels. This correction is of particular importance where the oil company delivers oil to you by pipe line. They pump into your tank and you read off the volume received by means of a float and scale. If the oil is delivered at a higher temperature than specified, as is apt to be the case on account of making it easier to pump, you are not getting as much oil as your reading shows. By taking the temperature of the oil as it comes thru the pipes and making the correction, you will not pay for more than you get.

For determining the amount of water in the oil, the simplest method is to dilute the oil with some solvent, as benzine, in equal parts and then whirl it vigorously until the separated layer of water does not appear to increase in volume. The dilutent should first be saturated with water by agitating it with water and then separate it from the free water by the use of a centrifuge.

BURNING WITH FUEL OIL

The equipment and methods used in the majority of cases are the same for all classes of ware. The time heat treatment curves depend on the class and weight of the ware being burned. Salt glazing will be discussed later on.

This description deals with burners which require an atomizing agent, used at over eight pounds pressure per square inch. There are systems on the market where low pressure air is used, but they are not considered here.

IMPORTANT FEATURES OF KILN EQUIPMENT

Several of these features will be discussed in detailed descriptions of burning certain kinds of ware, the reasons for this being that the methods vary with the kinds of ware.

There are several common points. The oil must be delivered to the kiln under sufficient pressure to supply the burners with ample amount for heat raising. This should not be over sixty pounds, but preferably lower. If a higher pressure is required it means that the supply pipes and burner ports are too small.

A thirty-five foot kiln of pipe or brick should not burn over 140 gallons of oil per hour at any time. This is high, but the burners should be able to take care of that amount. The practice is to use a supply pipe of 1½ to 1¼-inch for twelve burners or less.

Fuel oil is usually sluggish particularly in cold weather and should be warmed up to make it as thin a liquid as possible. How thin it will get or how hot it should be heated depends entirely upon the oil. Actual experience has shown that some oils appear to be a mixture that will let some of the heavy material settle out when the rest becomes thinner on heating. The part that settles will clog up the smaller pipes and burners and cause great inconvenience. In general, the hotter the oil the better.

The number of fire boxes used in kilns for burning oil is the same as is the usual practice when building kilns in which coal is burned. One burner is used in each box, excepting in extreme cases. Boxes are of about the same type of construction as those used for coal. The oil burning boxes can be built lower, but this is not the general practice. The fronts of oil burning boxes are arranged differently for different ware and this is discussed later. The throats of the boxes, or bag openings into the kiln, should be very open to prevent excessive overheating and burning out of fire boxes and bags. If oil is not handled properly this burning out of boxes is one of the first things that will occur, particularly on a new plant or one where oil is being used for the first time. There is no reason for this, as oil-fired boxes will outlast coal-fired boxes when handled properly.

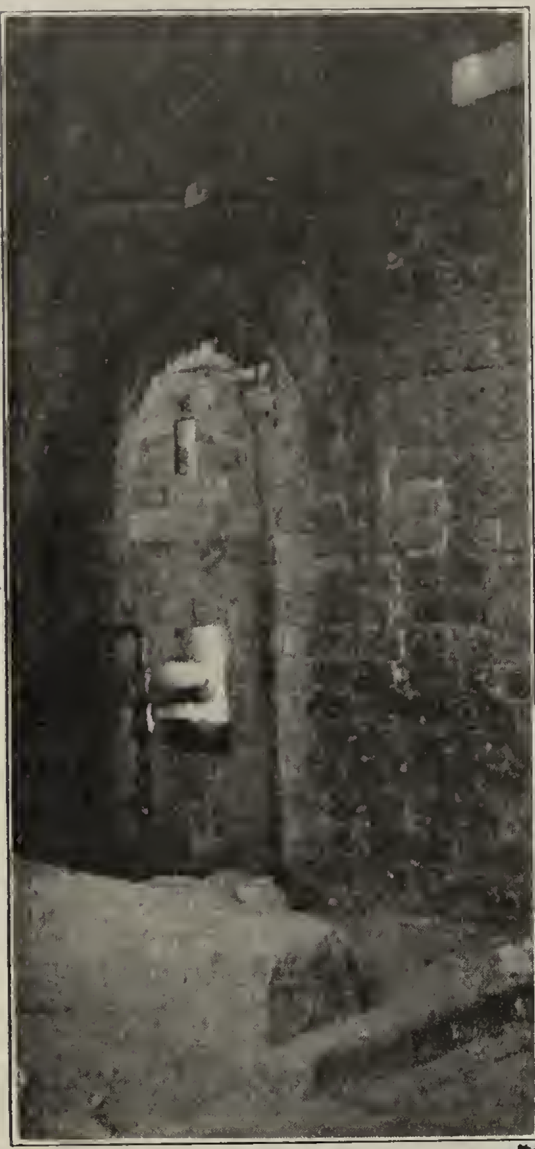


Fig. 3. This Shows the Wrong W[illegible] to Mount a Burner. Cut Also Sho[illegible] Ditch in Which Oil that Leaks Out Can Flow to Sewer.

An air inlet hole at the top of the box that will allow cool air to go in just under the arch of the top of the box will help to keep the arch cool and prevent its burning out. See Figures 2 and 3. Burning with as lazy a fire as possible will also help; i. e., atomize with as low a pressure as possible and do not drive the flame against any of the brick work more than is absolutely necessary.

When air is used as the atomizing agent, keep the pressure as low as can be consistently done. Each pound of oil burned will require from seven to ten pounds of free air in the burner.

When steam is used as the atomizing agent special care should be taken to keep it as dry as possible. Steam is used at the boiler burners almost exclusively, as it can be used at boiler pressure and kept dry. The farther the kilns are from the boilers the more unsatisfactory the steam will be.

BURNERS

There are many types of burners on the market, and many home-made ones as well, all doing fair work and all more or less fitted for their particular conditions. It is not unusual to see an operator try out a burner and condemn it because it does not fit his conditions; then make a burner that does fit the conditions, when as a matter of fact the other burner would have done even better with a slight alteration. The fact that the above can be done indicates that the burner is not the only essential part of a system, but should be studied carefully for the particular conditions for which it is to be used. The writer has seen variations in air pressure for atomizing at various plants from as low as eight pounds up to as high as forty pounds per square inch, or steam up to 100 pounds and variations in the oil pressure from fifteen up to seventy-five pounds pressure. Some places the oil pressure will be high, and some places the atomizing agent. Usually the operator will tell you he thinks his conditions are right.

The essential things about a burner are:

1. It must be accessible so it can be easily cleaned.
2. It must be designed for its work; i. e., the ports and relation of one to the other must be arranged according to the pressures used. The atomization must be good.
3. The connections, valves, etc. must be arranged as flexible as possible.
4. The parts should be standardized and interchangeable.

By using ground joint unions instead of the standard in which it is necessary to use rubber gaskets, it is possible to use one set of burners on several kilns and thus make a saving in first cost. Of course, it is better from an operating standpoint to have a complete set. The accompanying cut No. 1 of a Schur's burner shows a plug at the back which can easily be taken out for cleaning. This burner deserves mention on account of its rather general use in the ceramic field on account of its adaptability to various working conditions. The regulation of the mixture can be made according to conditions by screwing the cap back and forth, thus making a good mixture regardless of the amount flowing. The amount flowing is controlled by separate valves.

BURNER MUST BE REGULATED

No burner will be a success if it cannot be regulated so as to make a proper mixture of oil and air. It is also necessary that the auxiliary air be supplied as it should be. This depends largely upon fire box construction and placing of the burners. Figure No. 2 shows a very good arrangement for adjustment of the burner. Note how it can be pulled back from the opening or pointed up or down. This is of particular use in burning, as the flame can be thrown to the front or rear of the box as desired. Figure No. 3 shows the wrong way to mount a burner. The flame from this burner cannot be thrown up or down and it cannot be pulled back from the box to permit the sucking in

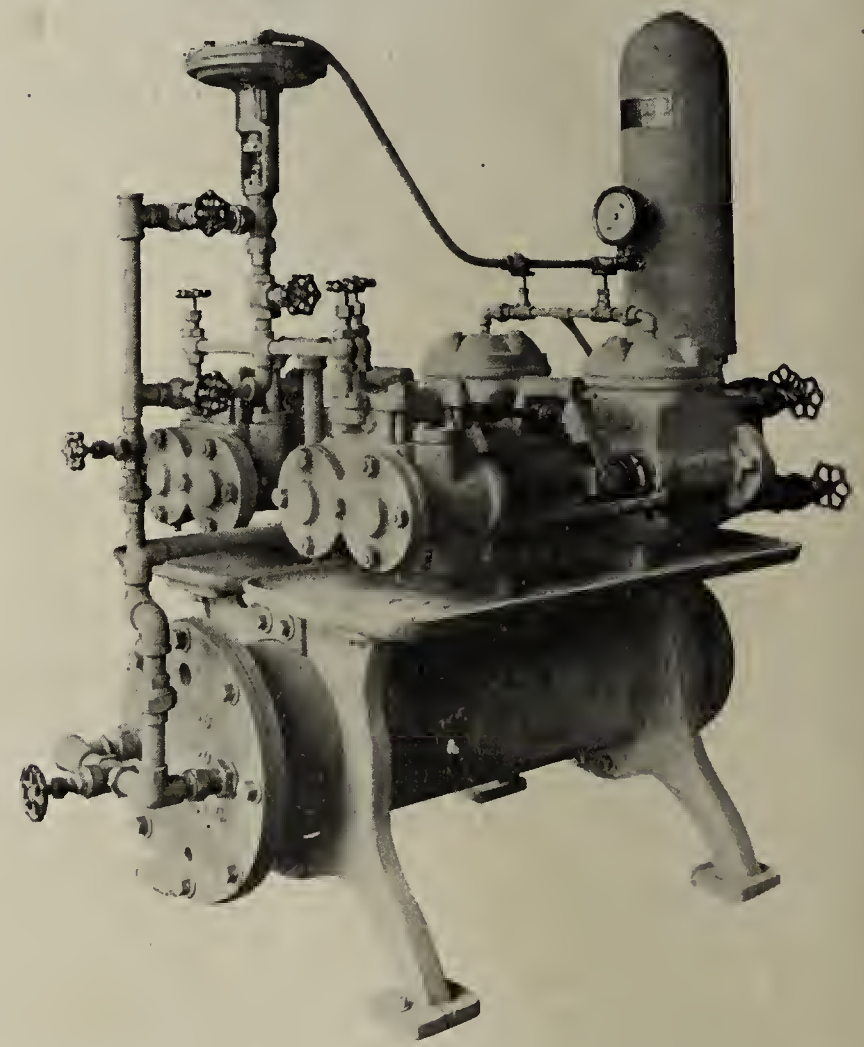


Fig. 4. Oil Pumping Set With Diaphragm Governor Connected.

of more auxiliary air, or for moving it back out of the heat after the kiln is burned off. This cut also shows a ditch around the kiln in which any oil that leaks out in case of a break, can flow to the sewer instead of flowing over the floor and causing inconvenience and fire risk. This feature is well worth having where oil is used.

IMPORTANCE OF CONSTANT FEED

The burner and its adjustment must be right, but the oil and atomizing agent must be supplied to them under uniform conditions and in the proper relative quantities in order to produce proper results. This lack of relation of pressure is something that can be overcome very easily and yet is not properly taken care of on probably one-half the yards where oil is used. It is very easy to realize what it means to a burner on a twenty-kiln yard when there is trouble of this sort. If, for example, there are eight fire boxes to a kiln and he has seven hot kilns, it means he is looking after fifty-six burners. If the oil pressure suddenly jumps from 40 to 60 pounds pressure, it is very evident that all the burners will start smoking violently, and in burning some classes of ware cause considerable damage as well as waste of fuel. The pump house is usually behind the plant near the boiler house and it means a trip to the engineer and a hunt for the trouble or an altering of all the burner valves, with a chance of going all over them again within a few minutes' time. The writer has seen this happen on several occasions and heard a good many complaints about it happening on other yards and so feels justified in emphasizing the necessity of maintaining uniform relative pressure between the oil and atomizing agent. A diaphragm pump governor will overcome a great deal of the trouble caused by the oil pump, and an unloader on the compressor or a reducing valve on the steam line will help steady the pressure of the atomizing agent.

Figure No. 4 shows an oil pumping set and how the diaphragm pump governor is connected up. Several firms manufacture this pumping set. The cut shows the Wilgus type. This type is compact and efficient and widely used, particularly in boiler installations. The pumps are in duplicate and arranged to exhaust the steam thru an oil heater so as to warm the oil up to facilitate pumping. All oil pumps should be equipped with special valves and in buying pumps it should be stated that they are for oil.

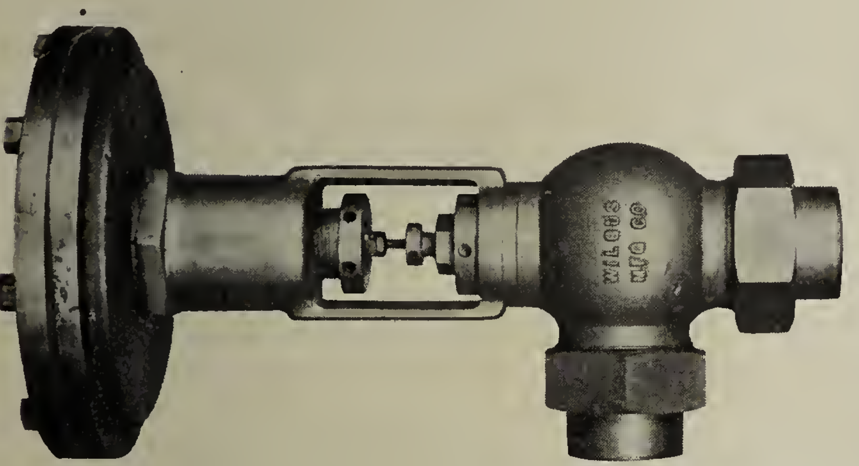


Fig. 5. Diaphragm Governor. The Balanced Steam Inlet Valve Is Opened or Closed by the Stem Which is Fastened to the Diaphragm in the Disk-Shaped Head.

Figure No. 5 shows a diaphragm governor. This is a standard fitting but a brief description may be of interest. The balanced steam inlet valve is opened or closed by the stem which is fastened to the diaphragm in the disk-shaped head. The top side of the diaphragm is connected and filled with the oil, the pressure of which it is desired to regulate. If the pressure is too great the oil will press the diaphragm down and close the steam down and the pump will stop operating until the pressure has been relieved. Even with a pressure regulator on both the oil and the atomizing agent there are chances for variation between them. This can be caused by closing down a finished kiln particularly when there are only a few kilns on high fire, or by having an accident. It would be possible to arrange the two systems so that the oil pumps were regulated by the diaphragm balanced valve which in turn was opened or closed by pressure supplied by the atomizing agent instead of the oil. This would make a direct relation between the two and if the pressure of the atomizing agent varied, the oil pressure would also vary similarly. A much more positive method of control and one which has been in actual operation for some years where air is used, is that of forcing the oil to the kilns by means of the air and using the oil pumps only for pumping the oil into the pressure tank.

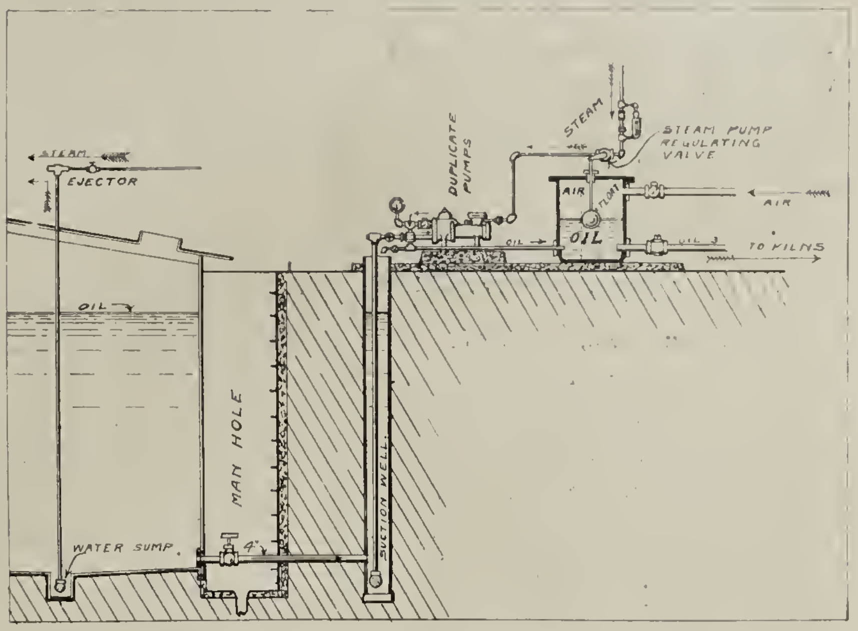


Fig. 6. This Shows the Complete Oil Burning System Which, Altho Not in General Use, Is Superior to a Great Many Systems

Figure No. 6 shows the system. As this system is not in general use, but is far superior to most of the systems, a detailed description follows: Oil is pumped into the pressure tank until the float rises to the proper point, when the lever handle connected with the float cuts off the steam until the oil again begins to settle, when the pump again starts. That is, the pump is used only for maintaining a constant level of oil in the pressure tank. The oil is forced out of the tank into the kiln burner supply pipes by means of the compressed air which enters the top of the pressure tank from the compressor and atomizing system. It is easily seen that this method maintains a constant relation between the oil and air, and that the two pressures will be nearly the same at the burners, provided the pressure tank is on about the same level. The advantage of this system is that the supply of oil and air at the burners is always such that a proper mixture will be maintained, even if the pressure should alter and the only way that the pressure will alter will be by the failure of the compressor. It is regulated by means of a governor and unloader and can be maintained at a fairly uniform pressure. If the compressor is driven by electricity it can be controlled by a governor that shuts off or starts the motor as it is required.

The method of forcing the oil in this way also supplies the burners with oil without any pulsations as may occur when a pump is used. This sort of a constant pressure can also be maintained by use of a stand pipe or gravity flow but these are not considered as they are permitted by fire insurance companies in exceptional cases only.

(To be continued) p. 1059

Help Foch Beat the Boche—Buy War Savings Stamps.

Mechanical Engineers to Meet

The spring meeting of the American Society of Mechanical Engineers will be held this year at Worcester, Mass., June 4 to 7, with headquarters at the Hotel Bancroft. Professional sessions will be held both at the hotel and at the Worcester Polytechnic Institute, and will largely relate to questions with which engineers are now having to deal in connection with the war. A complete program may be obtained by writing to the Society at 29 W. 39th St., New York, N. Y.

* * *

Sew on a Star!

Leo J. Sheridan, associate editor of *Brick and Clay Record,* has stepped forward at the call of "Uncle Sam" for volunteers. He has left the editorial sanctum to be a birdman. He is now at the United States School of Military Aeronautics, Champaign, Ill., where he will take up a preliminary training course in ground work. After a strenuous tuition period of six weeks, it is expected he will be transferred to one of the flying fields in Texas.

He goes with the sincerest good wishes of his many friends in the clayworking industry, who are looking for him to earn a lieutenancy very shortly.

He may be reached by addressing, Cadet Leo J. Sheridan, Barracks No. 1, United States School of Military Aeronautics, Champaign, Ill.

Photo by W. Eberman
LEO J. SHERIDAN

* * *

Face Brick Dealers Meet in New York

The board of trustees of the Face Brick Dealers Association of America held a quarterly meeting at the McAlpin Hotel, N. Y., April 23 and 24, 1918. There were present at this meeting, Jno. M. Stoner, president, Cincinnati, Ohio; A. S. Reid, Newark, N. J.; J. W. Morrison, Detroit, Mich.; W. H. Gifford, Chicago, Ill., and H. Serkowich, secretary, Cincinnati, Ohio.

A number of very important matters were considered. The Conference at Chicago on Monday, March 18, at which the president and secretary of the Association were present, meeting with other association leaders in the clay products industry, was discussed and a report of same made by the secretary. This meeting it will be remembered was called for the purpose of arriving at some plan for presenting to the government the resources of the clay products industry. It resulted, however, in the formation of a movement to organize a common brick association on a business basis.

The matter of promoting face building brick thru educational institutions was also taken up and a report made on this subject. The financial condition of the association was considered as well as more important matters.

Thru the efforts of President Jno. M. Stoner, a meeting of the face brick dealers in New York City was arranged and was held on April 24, at 3 P. M. at the McAlpin Hotel. The New York dealers have no local association and their meeting under these circumstances was somewhat of a novelty.

After a very interesting session and a discussion by all the New York dealers present, the consensus of opinion was that New York City should have an organization of face brick dealers affiliated with the Face Brick Dealers Association of America and that the New York dealers call a meeting in the near future, proceed to organize and so notify the president of the national association.

* * *

Federal Housing Code to Permit Clay Pipe

The government's standards for war housing drawn up by Lawrence Veiller, secretary of the National Housing Association, have already been mentioned in the columns of *Brick and Clay Record.* Attention was called in the April 23 issue to the important part which burned clay will play in the construction of permanent houses for industrial workers during the period of the war.

It has developed, however, that this same specification which seemed to be so favorable to brick and tile was absolutely discriminative against the use of vitrified glazed sanitary sewer pipe. The specification in this regard reads "The house drain under the house and five feet outside of it is required to be of extra heavy cast iron. Soil and waste lines similarly are recommended to be either extra heavy cast iron or genuine wrought iron and are required to be extended thru the roof."

Vigorous objection to this unfair specification has been made by manufacturers of vitrified glazed sanitary sewer pipe. Representation has been made to those who have in hand the matter of specifying the materials which will be used in the government's war housing program that clay pipe is not only every bit as good as cast or wrought iron pipe but is much lower in cost.

News comes that the particular part of the specification referring to sewer pipe has been changed to read vitrified glazed sanitary sewer pipe as an alternate to wrought or cast iron pipe under the house.

Altho flue lining was mentioned in the same specification nothing was said as to the material from which it was to be made. The government's attention was called to the advisability of specifying "fire clay flue lining" where "flue lining" is mentioned and it is our understanding that this will be done. These are two distinct victories for burned clay.

A PAVING BRICK CONTRACT *is* RESURRECTED

A Company Manufacturing Fire Brick, In Order to Obtain a Large Paving Brick Contract Which Was Needed to Keep the Plant Running, Accepted This Contract Under Rigid Terms, Guaranteeing Replacement of Brick That Failed for Any Cause Whatsoever. Due to Improper Construction, the Road Had to Be Rebuilt. Read the Story and Find Out Who Paid the Bill.

By G. W. Greenwood, M. A. (Oxon)

Secretary, United Fire Brick Company, Uniontown, Pa.

WITH AN AIR OF DEJECTION, the sales manager, Baldwin, came into the General Manager's den and dropped into a chair, his long arms and legs sticking out at odd angles, reminding one of the insect known as a devil's darning needle.

"I'm head first in trouble, clear up to my ankles."

"Then you're in deep trouble, for sure. An ordinary mortal would be in up to his knees. What is the occasion of the gloom?" solicitously inquired the G. M.

"We have just received a letter from the commissioners in reference to county roads for which we furnished paving blocks a few years ago, so Sellers and I have just taken a run over the roads in question. We found some with ruts so deep that the brick are heaved up in the center, making the highway look like the roof of a barn. Of course what this has done to the brick is a plenty."

"What is the cause of this, do you think?"

"No base. To begin with, before the road was built, it was at times impassable. It was claimed that one could not go over it in a flying machine. A farmer started to town in the early dawn, with a load of apples. Unknown to him, the end gate came out and one by one the apples silently rolled out into the muddy road bed. Finally he stuck completely and as he looked around and saw the empty wagon he exclaimed, 'Stuck fast and *nothing to unload!*' Then they bricked it, but used only a light stone foundation and sand filler, with no curb, no side drains, so that the water simply settled under the road and made it like quicksand. Then the road is only about ten feet wide, so that the wear is concentrated; not distributed as it is in the case of a wider road. With the improvement of the road, the loads began to increase. It was built originally for such traffic as had been using it, but then big motor trucks came into general use and these put on, not merely all the road bed would stand, but all they could get on the truck. Traffic which once would have gone miles to avoid this road, now comes miles out of their most direct route to go over it. And so the road went down on each side and up in the middle until now there is no place to drive except in these ruts, even if one wanted to. Then along comes a traction engine with cleats and the brick are pried loose sideways as well as endways."

HEAVILY LOADED TRUCKS CAUSED DAMAGE

"Is there no law to limit the load a truck may carry, or to prevent the use of traction engines with cleats going over brick roads and ripping them up?" inquired the G. M.

"Not in this state, at any rate. They destroy a road and then grumble because it is in bad order. On account of having no curb, the brick are spreading so that even where the base is holding up the brick are in places an inch or more apart. When a truck, traction engine, or heavily loaded wagon pulls off the road to let another pass, each in getting back onto the road digs a few blocks out along the side. In descending hills, teamsters are accustomed to drive with one wheel just off the paved section, right up against the edge of the brick, which thus serves as a brake. The berms are only a few stones set on edge, and these easily become dislodged."

"This sounds serious enough, for sure. But as the Ardent plant never made paving blocks, I am not familiar with them or their use. Whose fault would it seem to be?"

Drawing his scattered members into closer compass, the sales manager responded, "One can hardly say it was anybody's fault. No one at the time this road was built could foresee the increased strain which would result from the introduction of trucks, just as the builders of railroads originally could not foresee how train loads would increase beyond the carrying capacity of road beds and bridges, or that tunnels would prove too small. The lessons learned from roads such as this are worth all they cost, provided one takes advantage of them."

"In that case, why are you so despondent? Maybe we can get a chance to furnish the brick for rebuilding the road on a good basis," said the G. M. hopefully.

"That's just what I am afraid of. We may get to furnish the brick all right, but we may not get paid for doing it. Our contract provides that if within five years the brick shall fail for *any cause whatever* such brick are to be replaced at our expense."

"Heavens and earth, man, you don't mean to say we have to pay for rebuilding that ten miles of road! What's right is right, and we would want to replace any of our brick which had proven defective, but even if they tried to get us to replace brick where the fault was not ours, would we have no defense?" demanded the G. M.

CONTRACT RATHER ONE-SIDED

"I'm afraid our defense would come a little too late," said Baldwin. "In the original contract we empower the county attorney to appear for us and to confess judgment on our behalf for any material they may condemn during the period covered by the contract."

"Well wouldn't that jar you," said the surprised G. M. "Think of furnishing brick for a furnace and giving a bond to replace any which might prove defective within five years, irrespective of the cause of failure. Why did we ever enter into such a one-sided agreement?"

"It was this way. When we entered the paving brick business it was on account of not having enough fire brick business to keep the plants in operation. We had, of course, to subscribe to the same condition as firms which had been in the business for years, and if one firm did not want to accept such a contract there were several other firms which were ready and willing to subscribe to them. On account of lack of co-operation among manufacturers, and mutual distrust, all were easy marks. Of course, many firms were just as unfair as they could be and would ship anything which stood any chance of getting by. They would ship blocks which were soft, irregular, cracked, deformed, deeply kiln marked, badly laminated, chipped, bloated, hillsides with no bevel, red, brown, black, buff, white, and with every other conceivable defect or lack of uniformity. And of course this put a burden upon every manufacturer and caused the engineers to draw up specifications which were more and more rigid. In fact, had it not been for the stand taken in years past by conscientious engineers, brick roads would have been in disrepute because of the shortsightedness of the manufacturers themselves."

"In other words, they were in danger of killing the goose that laid the golden brick," suggested the G. M.

"They were likely to make a killing, all right. No goose would be able to digest the stuff some manufacturers would have shipped out. And I don't think we would have headed the procession ourselves in the good paving block competition. But thank goodness, we are apparently now on a sound footing—on a brick highway with a cement foundation, in fact."

SECONDS ON YARD AN ASSET

"Well then are we still signing those death warrants?" asked the G. M.

"Not on your life. When I took a hand as sales manager, I had already the benefit of my predecessor's experiences, and we changed our course. We sized it up like this: suppose we ship out a car containing a bunch of inferior brick. The freight is paid, and they are hauled several miles into the country to a road under construction; then they are condemned and anything one can get for them as seconds will not cover the freight and the hauling. But suppose they are kept on our own yards: they can be used for repairs, or sold as seconds, and some salvage obtained. So I took the position that a car of seconds on our yard was an asset, altho perhaps not a very valuable one; but on a first class job, they are a decided liability, involving a decided financial loss as well as a loss of prestige. As a result, during the past few years we have not had a single car refused. Of course, we have at times sold some cracking good pavers as seconds, but don't you think it pays better to sacrifice a few good pavers as seconds, rather than risk spoiling a good impression by sending some seconds out as firsts?"

"You bet your neck it pays," declared the G. M.

The sales manager arose, stretching himself to his full height and extending his long arms above him, remarking, "Well, I'll go home and sleep over the subject, and then take another turn at it tomorrow."

MANUFACTURERS RELEASED FROM GUARANTEE

The following afternoon he stooped down and looking into the office of the General Manager, he said, "I've just come in from a tour of inspection of the brick roads we were discussing yesterday, in company with the county engineer. He says that, considering the faulty construction of the road, it's a wonder any brick at all are left on it. The commissioners have released us from our guarantee, and have advertised for bids for rebuilding the road full sixteen feet wide, with a cement base and curb."

"It's a mighty good thing for us we had fair minded officials to deal with, that's sure. But since we have got into the subject, suppose we have Sellers go into the question of contracts, getting as many as he can lay his hands on, and finding out their effect on manufacturers."

Indiana Highway Law Unconstitutional

In a decision handed down May 8, at Noblesville, Ind., by Judge Clore, of the Hamilton circuit court, the Indiana state highway commission law, regarded as one of the most important measures enacted by the last legislature, was declared unconstitutional.

The ruling will attract attention all over the state, in view of the fact that it has a direct bearing on all of the state roads which the commission has planned to build during the next two or three years, including the range line road from Indianapolis thru Hamilton County to Kokomo and South Bend. The decision will only stop work which was contemplated on the range line highway, but it is reasonably certain that nothing will be done on the other state highways, in the face of the ruling, until there is a decision from the higher court.

The action was taken in over-ruling a demurrer filed by the state against a suit questioning the validity of the act, which was filed by Robert House, wealthy farmer living in Hamilton County. The defendants in the proceedings were L. H. Wright, chairman of the state highway commission, and its other members, together with Otto L. Klauss, state auditor.

While the case can now go to trial on its merits, it is understood that this course will not be followed by the state, since the ruling of Judge Clore on the demurrer indicates what his final decision would be. Instead, it is expected that the defendants will appeal at once to the state supreme court. Ele Stansbury, attorney general of Indiana, was present when the decision was announced. Should an appeal be taken at once, the case will probably reach the supreme court within ten days. An advancement of the cause will be asked in the hope that the court will hand down a final opinion on the validity of the law before it takes its summer vacation.

A number of combined road and automobile organizations have sent representatives to the attorney general to offer what assistance and co-operation is at their command. They declare that pro-counsel will be supplied the attorney general if he wishes to accept it as well as the moral and other support of all members of the state organizations in a supreme effort to keep the law from meeting the same fate that has befallen all other principal legislation enacted by the last legislature.

Terra Cotta Shells for Training Camps

Terra cotta plants in and about Middlesex County, N. J., are giving their attention to the making of terra cotta bombs, used mainly in the American training camps.

It is reported on good authority that the Atlantic Terra Cotta Co. and the newly formed Seaboard Clay Products Co., embracing three plants in New Jersey, hold government contracts but company officials are reluctant to discuss these, altho they admit that they are to manufacture such shells by the million. The Seaboard company are planning the installation of new machinery for the making of the shells.

The Federal Terra Cotta Co., of Perth Amboy and Woodbridge, N. J., was among the first to experiment with terra cotta grenades and the like. These were not successful for actual warfare because they blew to dust instead of particles with destructive forces, but experiments have proved their superiority to steel shells for practice work.

It is estimated that terra cotta shells will save many tons of steel and will also relieve the added pressure from the steel and munitions industry, of making shells for practice shots in the camps.

The terra cotta shells now being manufactured are from two to three inches thick and are modeled into sections with depressions extending about one-quarter of the way thru the wall.

⁂

Syracuse in Desperate Need of Homes

A thoro investigation of housing conditions in Syracuse, N. Y., with a view toward improving living conditions for workmen and making it possible for the city to obtain a much greater allotment of "war business" than it now has, has been undertaken by Mayor W. G. Stone.

A committee representing the Chamber of Commerce and the Manufacturers' Association will meet with C. S. Congdon, of the Syracuse Realty Board and start a detailed city-wide survey such as has been made in other cities.

A canvass of building supply dealers, realty men and contractors brought out the general sentiment that the heart of the trouble is due to the fact that the provision for housing accommodations has been left almost entirely to private enterprise—chiefly to the speculative builder. In the present emergency this system has broken down for one reason or another, but mainly because of the high price and scarcity of labor and also because of the high prices of building materials. The builders have not been able to finance the proposition and what ones have been able to do so are at work on more expensive types of buildings. Some local concerns have met their own individual problems by building homes for their workers. The Will and Baumer plant has constructed about half a hundred dwellings while the Solvay Process Co. has gone into this extensively and has built a larger number and will build several hundred more if necessary. This action, however, does not supply the larger demands of the city.

Here are a few sentiments expressed by representative business men:

George B. Merriman, manager labor relations of the Brown-Lipe-Chapin Co.: "Housing conditions are not satisfactory. We find rents are high, houses of the sort satisfactory for workmen are scarce and among the foreign classes there is serious overcrowding."

George H. Curtis, manager employment department of the Solvay Process Co.: "There is a shortage of houses for workingmen. We have lost some men recently who came here from out of town and could not find accommodations. Houses that can be rented for from $18 to $22 per month are in great demand."

James Miller Russell, real estate expert: "I am unable to find any houses vacant renting for between $18 and $30. I do not know what people are doing as I have between 20 and 30 calls per day from people seeking living quarters."

What is true in Syracuse is equally and in some cases more true in a dozen or more other cities in the state. Scores of small places have become "war boom" towns and the influx of workers has found them totally unprepared. The result is that the skilled laborers, mechanics and the like try to live under the most adverse conditions and finally quit in disgust and go back to their former homes.

⁂

Substitute Clay Brick Manufacturer Active

The Glass Brick Co., of Huntington, W. Va., has started a drive to sell its products to hotels, and has secured the service of C. S. Price, formerly with the Deshler Hotel, of Columbus, Ohio, as advertising manager. Mr. Price will make a drive to show hotel men that he has something new, tried and true, that will prove well worth investigating. With the increasing demand for sanitary finishes, the company has started manufacturing a special glass brick for finishing lobbies, restaurants, kitchens, and bath rooms. Such brick for years have been used in hospitals, sanitariums, office buildings and even homes.

Glass brick consists of a glass facing one-quarter of an inch thick, attached to a concrete block, by a dovetailed method, molded in the glass. It is claimed that it will not crack, discolor from age or absorb stain.

The company's large plant is close to the mines and sources of raw material, and it is believed the product can be manufactured and marketed at a low price. The company has just recently finished its plant.

⁂

Powdered Coal as a Fuel

Some ceramic engineers are of the opinion that powdered fuel may be used with good success in the burning of certain kinds of clay products. However, as yet, little or no experimental work has been done in this line, but for those who are interested, there is a splendid new book on sale, thru *Brick and Clay Record's* book department, which covers this subject in a very complete manner.

The book is entitled "Powdered Coal as a Fuel" and is written by C. F. Herington. It contains valuable information on the general operation of a plant using powdered coal, a comparison of costs with oil and gas, and contains data on the coals suitable for powdering, preparation, burning, feeding application, as well as a description of its use in the cement and other industries. A very complete bibliography on books treating on this subject is also given. The book contains 211 pages and is listed at $3.00, postpaid.

⁂

Middlesex Clay for Lead Pencil Output

Lead pencils are now manufactured in the United States almost exclusively from clay mined in Middlesex County, N. J., according to a statement given publicity by Henry B. K. Kummel, state geologist, who remarks that this nation, prior to the war, depended entirely upon German clay for lead pencils.

Mr. Kummel's report emphasizes the importance of a Middlesex product that has been largely overlooked in the state's industrial reports, but which is rapidly forging to the front thru the enterprise of a few wide-awake individuals.

Who Saves Serves.

PROVING *the* ADAPTABILITY *of* BASE METAL COUPLES

Authorities Disagree as to What Temperature Limit the Base Metal Couple May Be Used With Success. Here is Some Practical Information on Its Use at a Plant Where Fairly High Temperatures Are Reached

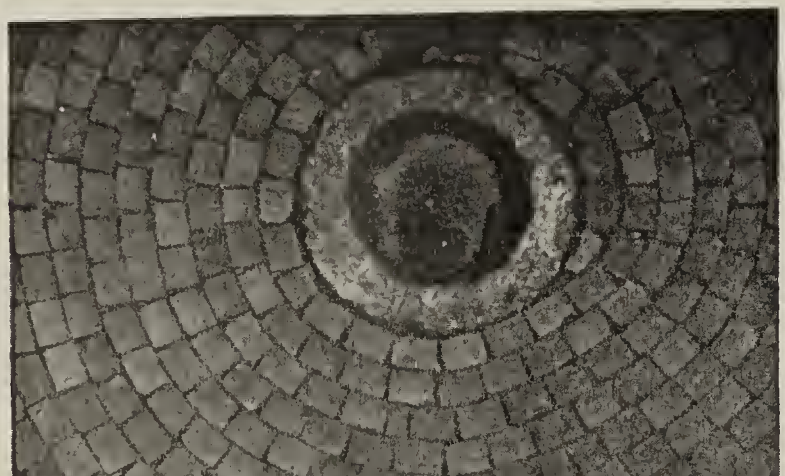
By Marion W. Blair

Superintendent, Thornton (W. Va.) Brick Company

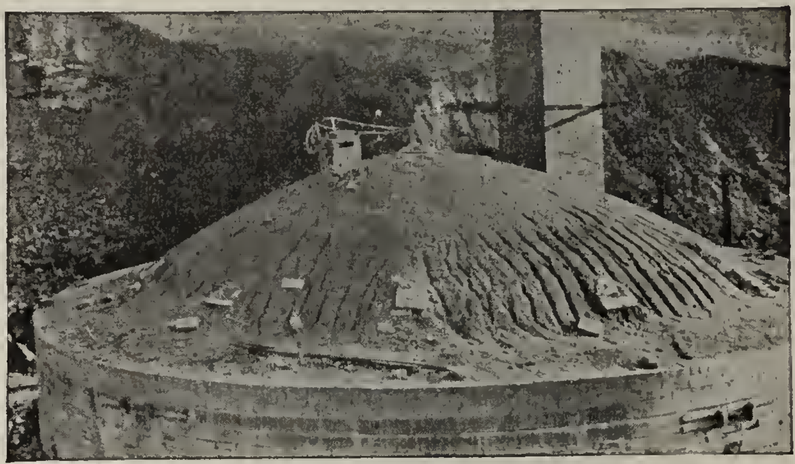
Editor's Note:—Several articles dealing with pyrometers have appeared in past issues of "Brick and Clay Record," some of which have been rather unfavorable toward the base metal couple. The result of this has been that clay proaucts manufacturers look on the base metal couple with distrust [illegible]pticism and hesitate in selecting this form of thermocouple. However, there are on record a number of successful applications of this coupling, one of which is described in the article which follows, and which has been written by a prominent clay plant superintendent. The fact that the base metal couple not only can be but is being used suceessfully, warrants a due consideration being given it by all manufacturers.

THE PYROMETER, with base metal couples, is an apparatus particularly adapted to the burning of rough clay wares at temperatures up to 2,400 deg. Fahr. It may be obtained at a price which the instrument will invariably repay in less than a year. Its record of improved burns and fuel saving has been established on plant after plant. Then why is there any hesitation on the part of the industry to take advantage of the information and consequent saving which it gives?

I am afraid that in the past and even now such statements as that of S. C. Karzen, which appeared on page 133 of the January 15 issue of *Brick and Clay Record* are partly responsible. There is in this statement a charge of unreliability and that cone 1 or 2,102-deg. Fahr. is the temperature limit at which a base metal couple may be used. He also objects to the crown position on account of temperature fluctuations but fails to recognize, or at least to state that the fluctuation may be a result of the manner in which the couple is installed, or that unreliability and temperature limit may be the result of unnecessary abuse. The position he suggests as better than the crown is probably the hottest in the kiln and most severe on the couple. The measurement of this highest temperature not only overtaxes the couple but is not as valuable as that of a lower one which more nearly corresponds with that of the ware at the kiln center. I have observed that usually if the center and bottom have been hot enough to prevent underburned ware the ware between the bag walls is somewhat over-burned. For this reason it seems to me that the placing of the couple between the bags is unnecessary abuse. An opinion of unreliability expressed by Mr. Karzen, however, might deter many plants from installing base metal couples which could not afford the platinum installation, and are thus deprived, thru misinformation, of the benefits to be had by a pyrometer installation and the introduction of exact methods into their business.



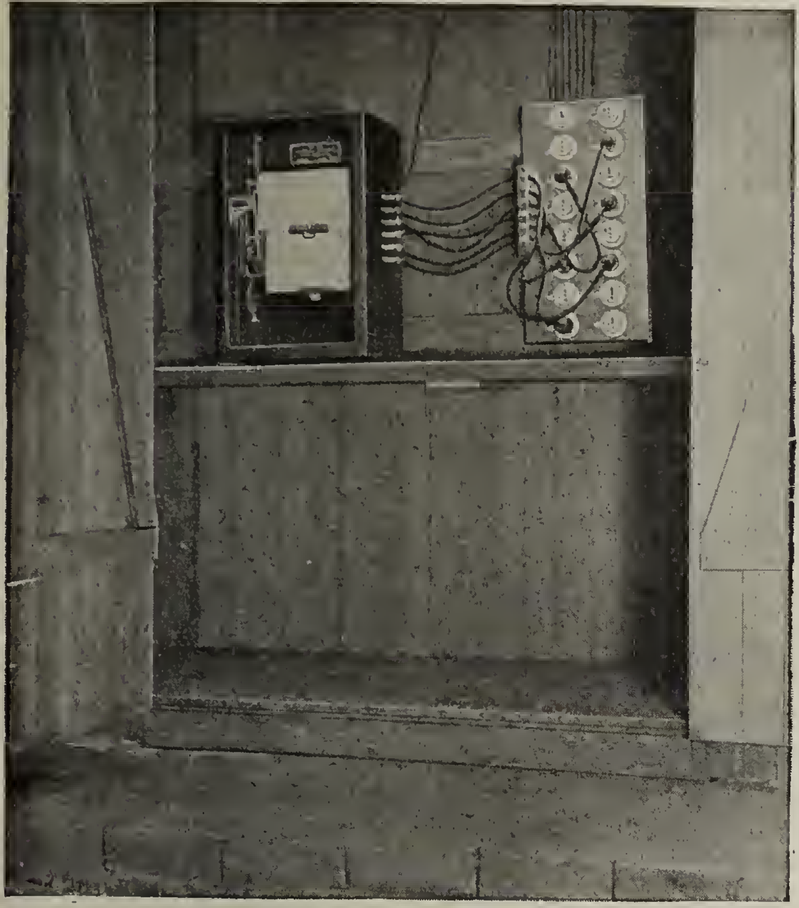
Inside of Kiln Crown Showing Location of Thermo-Couple.



Top of Kiln Showing Thermo-Couple Housing.

EXPERIENCE IN USING BASE METAL COUPLE

Those clay products manufacturers who would like to take advantage of the saving in first cost of base metal over platinum thermo-couples, but fear inaccuracy and short life of the base metal couple in recording the higher temperatures that at times exist in the kilns, may be interested in the experience on the plant of the Thornton (W. Va.) Fire Brick Co., where the writer is superintendent. At that plant we are able to avail ourselves of the



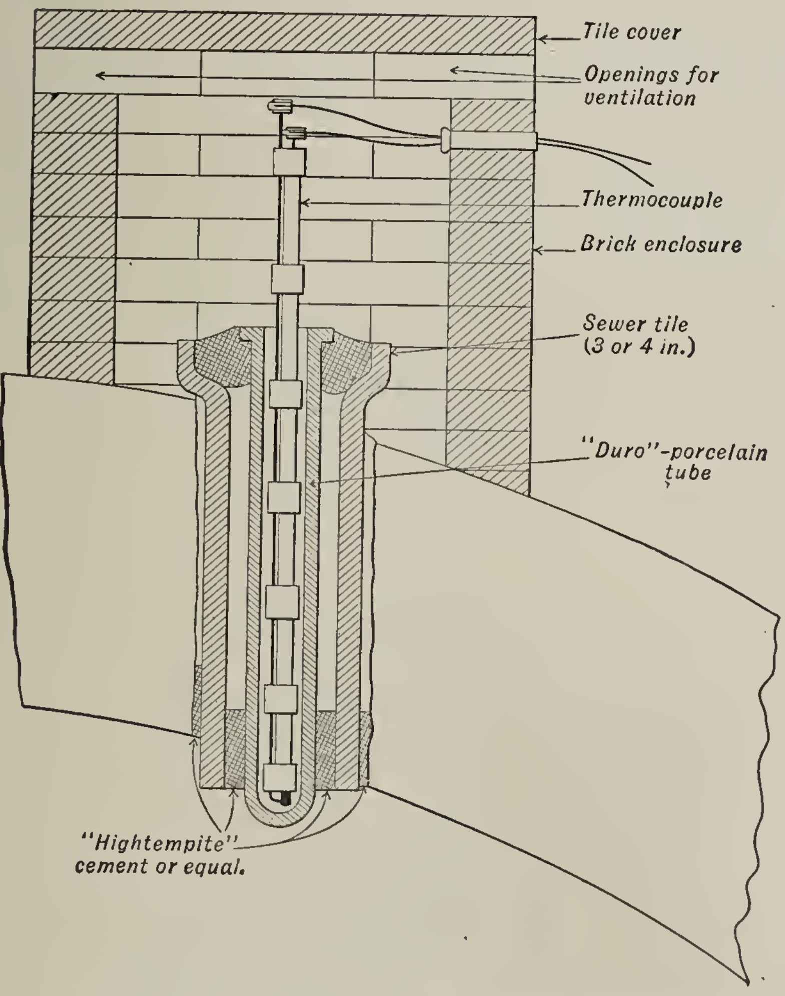
Recorder Which is Used for Making Permanent Records.

This is the Indicator for the Guidance of the Burners.

satisfaction derived from knowing exactly what our burning kilns are doing, of getting the highest possible percentage of first-class ware with the least amount of fuel, of being able to duplicate results, and of avoiding those unexplained heart and pocket-book breaking burns which just happen, nobody knows how, by using the base metal couple.

It has been found at this plant that the base metal couples stand up well in finishing temperatures around 2,300 deg. Fahr. (we check with cones and put cone 6 [2,282 deg. Fahr.] down on the twelfth course from the bottom) but there is a reason for this service, in fact, several reasons. First a kiln is seldom held at such a temperature for more than 72 hours in about every twenty days, and, second and possibly of more importance, is the fact that the junction ends only of the thermo-couple are exposed to the high temperature. The porcelain protecting tubes project into the kiln thru the crown only about one inch. The effect is to register a temperature corresponding to the inside of the crown itself, which changes slowly, rather than that of the gases which of course change with every shovelful of coal or opening of the furnace door. The brick under process of burning, however, change just as the crown does, that is, very slowly, owing to low heat conductivity. The information the brick burner should have is whether or not the kiln has increased steadily and as a whole in a given period of time, rather than the record of a series of flashes of 10, 20 or 30 degrees, which die out before the center of the kiln is reached much as the ripples on the surface of a pool of water die as they recede from a thrown pebble.

The regulation of the furnace of a brick kiln to these minor changes is uncalled for, hence a thermo-couple which will give net results at a moderate cost is worth while to the industry, but the use of platinum is an unnecessary expense. In most of the rougher clay wares a rise or fall of fifty degrees at the thermo-couple in an hour's time would have very little effect on the kiln as a whole.



Typical Method of Installing the Thermo-Couples.

DO NOT BURN UP COUPLE TO HEAT KILN

Some manufacturers and users project the couple six inches or more into the kiln claiming to measure cause rather than effect, forgetting apparently that the electric current developed is in proportion to the difference in temperature between the junction and the free ends of the couple, and that it is necessary to burn up six inches or more of the couple in order to heat the junction. Of course, only platinum will stand such abuse, but the net result in paving block or other rough clay ware kiln is no better than obtained with a base metal couple exposed only one inch.

The diagram shows the method of mounting the thermo-couples as installed at the Thornton plant, and the two photos indicate the position of the thermo-couple in the kiln crown. This point is selected about one-fourth the way down the crown and farthest from the prevailing wind. The porcelain tube enclosing the thermo-couple projects one inch thru the kiln crown. The tube is in turn protected from the effects of expansion, contraction, and distortion of the crown by a three-inch sewer pipe. The space around the tube inside the sewer pipe is tightly packed with a stiff fire clay mortar, which hardens enough to prevent the escape of gases around the tube and yet is sufficiently porous to form a fair non-conductor and yielding enough to cushion the tube against breakage.

The ventilated chimney outside protects the thermo-couple connections from the weather.

ECONOMY IN BASE METAL COUPLE

As a typical example of the economy of the base metal couple and this mounting, it was found that a couple which had exhausted its usefulness, had served to burn thirteen kilns. The couple cost $6.50 and as only about 1½ inches of the metal had been affected, the good material left, and available for making another couple was worth about $5.00. The actual cost per burn was therefore about 12 cents. We are perfectly satisfied to spend that much for the information the base metal couple gives and taking into account that the temperatures we are considering are always under 2,400 deg. Fahr., we do not believe the greater reliability of the platinum justifies its much higher cost.

Incidentally, the method of supporting the insulators as shown in the photograph may be of interest. The supports consist of one-inch pipe, the opposite ends of which are flattened and driven into the brick work. The upper end of the pipe is closed with a wooden plug to which is fastened an ordinary porcelain knob insulator. This arrangement gives a permanent, cheap, and substantial support for the connecting wires.

* * *

Large Factories Under Government Control Being Built With Brick

Whether or not brick is to lead in the building material field when once again conditions permit normal activity is a matter which will be largely determined by the attitude of manufactures and dealers. Opinions differ somewhat upon this point, yet gradually it would appear as tho the preponderance is swinging toward brick; or perhaps it is better to say burned clay in one form or another. The present is a good time to spread the propaganda of brick and burned clay so that when the war is over and the scramble for new construction work begins, clay will be so well known and its virtues so well understood that builders will turn toward it without further urging.

Take for example, the DuPont Company of Wilmington, Del. It is doing a great deal of building in various parts of the country. Inasmuch as the plants are under government control the locations cannot be given, but it is perhaps sufficient to say that it has at least five great plants in process of erection now. They are being built with steel frames and brick filling. In other words, for the character of building it is erecting, it believes brick to be most suitable. Before the war at some of the powder plants wood frame and light iron covering was used. That, it is said, has been changed and permanent structures are in process of construction at present.

What this great firm does is interesting because few in the country are larger, or handle larger interests. Its experts would not recommend brick if they did not think it was the best material available for such purpose. And clearly, if this firm finds it advantageous to erect factory buildings of brick, it is quite certain that others will undoubtedly make the same discovery. The cost is moderate and the character of the work when finished is beyond criticism. The conclusions to be drawn from this action of the DuPonts is enough to make any manufacturer who must erect large buildings pause and consider carefully before he decides upon any other material.

While considering this subject, it will do no harm to refer again to the fact that silk mill owners, where many looms are working and working very fast, find that brick is the only material that will stand the vibration without injury. Brick walls, when properly laid, have been found to be entirely immune from the effects of vibration, and silk mill owners are using brick for construction in their mills. Every new silk mill built in the last five years has been of brick and those which are to be built in the future, as soon as they are permitted to proceed with their plans, will be of brick too.

The action of these two widely separated industries in building their factories of brick are sufficient evidence that it is believed to be the best possible material where machinery is to be operated. These two important facts ought to be a species of encouragement, even tho at present the business outlook is anything but promising.

* * *

Civil Service War Needs

The United States Government is in urgent need of thousands of typewriter operators and stenographers and typewriters. All who pass examinations for the department and offices at Washington, D. C., are assured of certification for appointment. It is the manifest duty of citizens with this special knowledge to use it at this time where it will be of most value to the government. Women especially are urged to undertake this office work. Those who have not the required training are encouraged to undergo instruction at once.

Examinations for the Departmental Service, for both men and women, are held every Tuesday, in 450 of the principal cities of the United States, and applications may be filed with the Commission at Washington, D. C., at any time.

The entrance salary ranges from $1,000 to $1,200 a year. Advancement of capable employes to higher salaries is reasonably rapid.

Applicants must have reached their eighteenth birthday on the date of examination.

For full information in regard to the scope and character of the examination and for application blanks address the U. S. Civil Service Commission, Washington, D. C., or the Secretary of the U. S. Civil Service Board of Examiners at Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; San Francisco, Cal.; Honolulu, Hawaii, or San Juan, Porto Rico.

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Repair work amounting to $1,500 at the royal mausoleum grounds in the Nunanu Valley, Hawaii, has been completed. The work included brick sidewalks and a drainage system.

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Walker & Young, Honolulu, Hawaii, have been awarded the contract for the construction of a clay sewer pipe system at the aviation base at Ford Island, on their bid of $63,975.

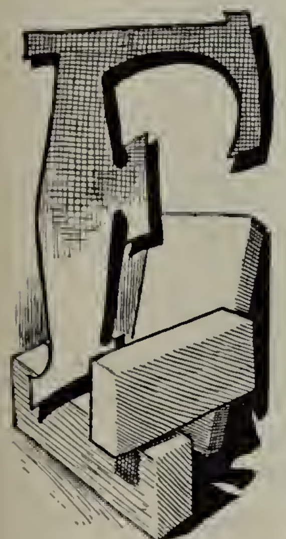
Lick a War Stamp and the Kaiser Too.

The MIDDLEMAN *in* REFRACTORIES

The Sale of Fire Brick Has Reached a Highly Specialized Plane to Which the Dealer Can Attain by Carefully Studying His Customers' Needs and Making His Recommendations Accordingly

By John D. Ramsay

President, Elk Fire Brick Co., St. Marys, Pa. An Address Delivered Before the New York State Builders' Supply Association



FIRST OF ALL let me say I am thoroly convinced that the middleman plays a very important part in the *economic commercial life* of this country. The proper purpose of every government should be to see that its nation is governed justly and economically and to further see that the consumer, who is the general public, receives his necessities at the *lowest cost.* In some cases it is no doubt true that the most economical method of supplying material to the customer, is direct from manufacturer to the user. Such cases, however, are undoubtedly rare and in nearly every instance the consumer receives his material at the lowest cost by having it pass thru *wholesaler and retailer.* For the purpose of this talk we will designate wholesaler and retailer as the *middleman.*

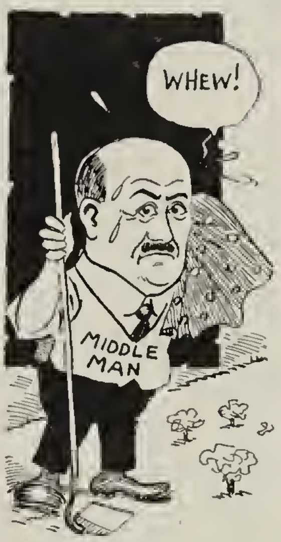
IMPORTANCE OF MIDDLEMAN

It must be evident to everyone, therefore, that the middleman has a *duty to perform* and plays a very important part in the distribution of commercial products and in a large measure his success and importance *depends on himself.* He is the man who is the "go between." He is the man who figures materially in the *ultimate cost* of the material when it is received by the consumer. If he is fully aware of this responsibility and awake to his possibilities, he will succeed in an extraordinary manner and will become a big factor in the industrial and commercial life of his community. If he does not recognize his *duties* toward the consumer, as well as the producer, he will fail, and a successor in his business will follow from time to time until the "right man is in the right place."

He is the Man Who is the "Go-Between"

I am fully aware of the fact, however, that the middleman has a *hard row to hoe.* He is between the devil and the deep sea, and somewhat resembles Washington before he crossed the Delaware. Before him is the Delaware River full of floating ice and behind him, a powerful army. If he moves forward he may drown and if he moves backward he will be captured as a prisoner or killed. He has no chance to escape until he has overcome his enemies and makes them recognize him. The middleman takes the kicks of the consumer on one side and the producer on the other. He battles with the producer for a lower price and with his competitors and the consumer for a higher figure for his goods.

As I said before, however, if he is the right man in the right place he will succeed and "stick" regardless of all obstacles. The middleman, however, must bear in mind some very important features and keep them before him constantly if he is to succeed.

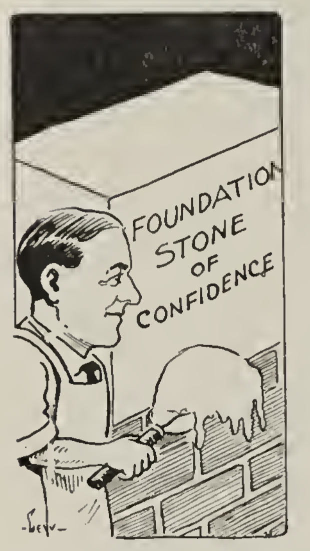


Hard Row to Hoe

SAME AS PRODUCER'S SALESMAN

The first one is that he is the representative of the producer just the same as the salaried man who travels from day to day and month to month selling goods for his firm. He must remember that nothwithstanding the fact that he is his own boss and selling his own goods, nevertheless he is selling the goods of the producer and statements made by him must be correct. He must bear in mind that misrepresentations made by him not only reflect on him but on the manufacturer of the commodity as well and he and the producer alike will suffer in the end under such misstatements. These may refer to quality or delivery or some other feature in connection with the business, but he personally represents the goods to the consumer and on him depends the future of that firm and the future distribution of those goods.

Second, the dealer should never accept the agency of a product unless he believes that it will be satisfactory to his trade. Nor should he accept the sale of a product from any concern unless he fully believes the concern is reliable and able to do what they agree. He should have absolute faith in the producers he represents and in the product they will offer him and he offers his trade in turn. He should thoroly investigate and determine to his own satisfaction whether the concerns he is to represent have the ability and will carry out promises made to him. Much of his success depends on the selection of his source of supply.



That Upon Which the House of Good Will Is Built

VALUE OF CONFIDENCE

Third, after he has made his selection he should instill in the mind of that producer the fact that he means business and is worthy of the confidence of the producer and his representatives. Without that confidence the middleman will not succeed, but with it he will be able to move a lot of material and finally will become a factor in the distribution of that product. He should do nothing at any time which might arouse the suspicion of the producer in the matter of injustice. He should always play the game with the face side of the cards up and should at no time attempt to deceive the producer regarding certain phases of his business. This co-operation is absolutely necessary to the success of the manufacturer and the dealer as well.

Fourth, after he has made his selection of his source of supply he should begin immediately to take a study of the products of that concern, how they are made, why they are made and all features in connection with their uses. He is a part of the sales organization of that company and is entitled to know and should know every feature in connection with the proper distribution and use of that product. If he expects to please his trade and satisfy the producer as well he must make a thoro study of the selling end of that business just as fully as a salesman employed on a salary. It should be his aim to get a thoro knowledge of the factory conditions, such as the management, the policies, shipping facilities and all features concerning the distribution. He will then have first hand knowledge of the actual conditions and will be able to decide many things which he could not even conceive without that knowledge.

SHOULD MAKE THORO STUDY OF MARKET

Fifth, after matters have developed to this point he should then make a thoro study of the conditions existing in the market and the competitive conditions. He will then be in position to know where it is used and when he is meeting legitimate competition. With the confidence and backing of the producer, the knowledge of the product and a knowledge of the market he will be able to sell the material and satisfy his trade. He will be able to market the material and please the producer in volume and profit. No man or organization should undertake the sale of any commodity unless he is familiar with all these features and is thoroly satisfied regarding same.

THE FLY WHEEL OF COMMERCIAL LIFE

I now wish to take up a very important feature in connection with the middleman's work. Confidence is the fly wheel which runs the commercial life of the universe. Without that the manufacturing industries of this country and the commerce of same would stop instantly. Confidence is the foundation of good will and the stronger you build the foundation the better the institution. The stronger the foundation of confidence the more durable and valuable will be the structure. If you have the confidence of the man with whom you are doing business you can make a profitable sale or a profitable purchase, but if you do not have his confidence you could not sell him gold dollars at fifty cents each. It is just as important that we have confidence of the people to whom we sell and the people from whom we purchase as it is for us to have confidence in them. Without this mutual confidence no business, whether it be manufacturing, wholesaling, retailing or whatsoever, can succeed. This same confidence is the "hands of co-operation" and we are fast learning to know that co-operation is the proper instrument instead of competition.

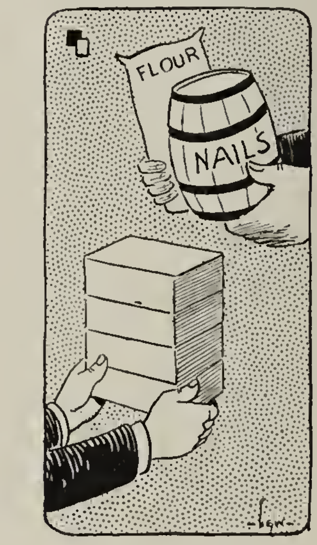
A Glimpse Into the Past

I urge you to bear in mind that confidence and co-operation are essential in the handling of any class of material and you must have confidence in the material you sell, or you will not succeed. If you believe in it you can make the consumer buy your goods.

BRIEF HISTORY OF FIRE BRICK BUSINESS

I have attempted to cover some general points and I am now going to take up the question of specific points in connection with the *middleman in refractories.* I am going to give you a little history of this industry, and while I do not care to divulge my age, I am perfectly willing to say I have been in this business a great many years. I desire to go back into the industry to the year 1855, and while I am not that old, I had the privilege of being connected with a man who started in the fire brick business in that year. Altho he is dead, I was associated with him for a number of years and have first hand knowledge as to the conditions during the early period of the industry.

I will not attempt to take you thru any phase of the refractories industry except that of selling, to which this talk applies, and from my knowledge I would divide the time from 1855 to the present day, into five distinct periods. Each of these periods will cover fifteen years and while they may not be the correct number of years in each case, they will serve to bring out the points I have in mind.



Trading Period

THE TRADING PERIOD

Eighteen hundred and fifty-five was the beginning of the fire brick industry in the United States. Prior to that time a great deal of that material had been brought from the other side and in fact little was consumed except what was brought from Scotland or Wales. About that time two small plants were started in the United States. One of these was in Pennsylvania and the other in Maryland. The output of each of those plants was from one to two thousand brick per day and possibly a little later on it was increased to three thousand per day. The material was what we would call an ordinary fire brick today. It was made by hand and

A Thrift Stamp a Day Keeps the Huns Away.

the material was ground by horse power and burned in open top kilns. After the manufacture of the brick had been completed, in most cases, the producer would go to the city and trade them for anything he could secure. He might trade them for flour, nails, steel or iron of some kind and bring that back and use it in his business, or he might bring the flour back and trade it to his men for labor. It frequently happened that those fire brick would be traded three of four times before they reached the ultimate consumer. The user made no inquiry as to the quality or any other features in connection with same. He took what he could get and used it wherever he needed that kind of material. That period was a "trading period" and the salesman was nothing more or less than a trader. As I said before, that period began about 1855 and ended about 1870.

THE BOOZE PERIOD

Booze Period

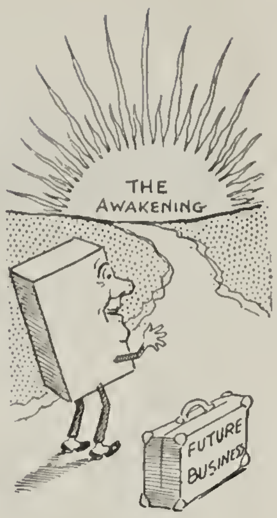
The second period began in 1870 and lasted until 1885, and some new features came into the industry. Manufacturing was done on a much larger scale and the demand for that commodity was light, while the production in this country was excessive. It was then that the first fire brick salesman started out in this country to get the business and traveled from mill to mill and furnace to furnace offering his ware. That was the period which we will call the "booze period." It was during that time that the seller having no knowledge of his product and having no knowledge of the places in which they were used, undertook to market his goods, as was the custom in many lines at that time, by finding out just how much liquor his customer could drink and then charge enough so he could furnish the booze. He forgot all about the quality of his material or where it was used, but he made a study of the buyer. The man to whom he was selling forgot all about the quality of the goods and where it was used and tried to see if he could drink all the other fellow could buy. You will note that no scientific development occurred in that period and it was merely a case of the booze buying the order.

THE GRAFT PERIOD

The third period began in 1885 and ended in 1900. This we will call the "graft period." The bricklayer, the foreman, the superintendent, the master mechanic, or "somebody else" had to be seen before the material could be used and if a commission was available the material could be used and was the "best on the market." If no commission was forthcoming some other brick was purchased and used in the furnace. The commission was invariably added to the price so that the consumer paid the addition, and quite often the manufacturer added more than was necessary to take care of the graft. The employe, who received the graft, cared little for the quality of the material, because the poorer it was the more he used, and the producer on the other hand cared less because the poorer the material the greater the amount of business and profits. You will readily understand that no scientific development in the manufacturing or distribution of fire brick occurred in that period because there was no incentive for it.

Graft Period

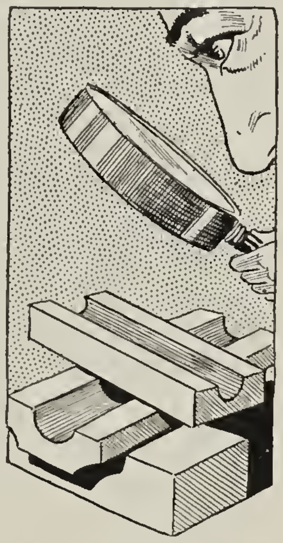
PERIOD OF BUSINESS AWAKENING



Period of Business Awakening

The fourth period is somewhat different. The manufacture and sale of brick were partly scientific and partly otherwise. We still had a little of the old time booze feature left. A great deal of the graft was carried over into this period but more or less science in manufacture and scientific selling was applied. The up-to-date firm hired a smooth talker or a salesman of good appearance, got away from the graft and liquor traffic more or less, and undertook to hypnotize the consumer into buying his products. The manufacturer on the other hand began to realize the necessity of making the proper kind of brick for the work. The consumer began to realize that his linings were not lasting as long as they should. The management in steel industries and other manufacturing enterprises began to learn that it was necessary for them to look into the matter of the use of their fire brick. There was an awakening both in the manufacturing and consuming end and before 1915 most manufacturers and most consumers began to see the importance of refractories in the manufacture of every commodity. It entered into the cost of steam, power, gas, steel and everything produced in a plant. You will see that some little development was made along the lines of scientific manufacture and sales of refractories, but it was merely an awakening. This was a real awakening period when consumer and producer alike began to realize the necessity of giving attention to that end of the business.

PRESENT DAY CONDITIONS

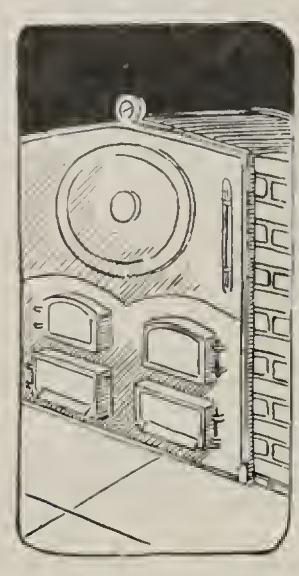


Make a Study of Refractories

I now wish to take up the most recent period which began with the year 1915 and will go on for years and years, and as it does, the methods of manufacture of fire brick and the selling of same will become a scientific business. The successful manufacturer from this time forth will be compelled to go out or send his representative and find out where his material is used. It will be necessary for him to secure the advice of skilled mechanical engineers. It will be necessary for him to have first hand knowledge of the manufacture of all kinds of material and in what way the manufacture affects the life of the fire brick he furnishes. The industry is entering on a scientific sales campaign and it behooves each of us to make a study of the conditions and to produce a brick to meet those conditions. No brand of brick will answer all these purposes, and it is therefore, necessary for different mixtures to be made so that the best service may be obtained by the ultimate consumer. This, therefore, is the scientific age in the industry and one which I will endeavor to present to you. If you have followed me thus far you will observe that I am ready to "hit the nail on the head" and reach my point—*the middleman in refractories.*

MAKE A STUDY OF REFRACTORIES

I have no doubt some of you have felt that the fire brick manufacturers have not given you a square deal and that they have not given you the necessary protection and cooperation. On the other hand I wonder if you have taken the necessary steps to follow this matter to the bottom. If not, then you owe it as a duty to yourself to make a study of the refractories selling business. You will see from my remarks that we are gradually getting to the need of scientific selling. That does not necessarily mean that we must be scientific men. It does mean that we must make a study of every condition surrounding the work and an equal study of the products we are offering for that work.



Necessary to Know Use of Brick

As I stated early in my talk you occupy the same position toward the fire brick manufacturer as does his salesmen. You are his personal representative on the ground dealing direct with the consumer and offering his products. Your work will mean much to that concern in the future. Your statements, your promises, your recommendations will all have a bearing on the future of the fire brick manufacturer you represent. They may mean success, they may mean failure and in every case the result will tell and will come directly to the producer of the goods.

NECESSARY TO KNOW USE OF BRICK

You will readily see it is important that the manufacturer of fire brick should believe that you know enough about the business to be able to sell his material intelligently, that you will not put the material where it is not best adapted and that you will not in the end reflect on the quality of material produced by him. I know of no other product on the market where the necessity of the knowledge of the material is so essential to the successful sale of same, as in the case of fire brick. You handle cement, lime, plaster and various other commodities, most all of which have a standard quality. Many of them have a standard test and if the material passes that test you need have no fear about the results. No such standard has been developed in the fire brick business and none can be developed for years because the local and peculiar conditions surrounding each case make it necessary to analyze that case carefully and then decide whether or not the material you are selling is suitable for the work. If not then it is better for you, better for the producer and much better for the consumer if you do not offer the material or make the sale.

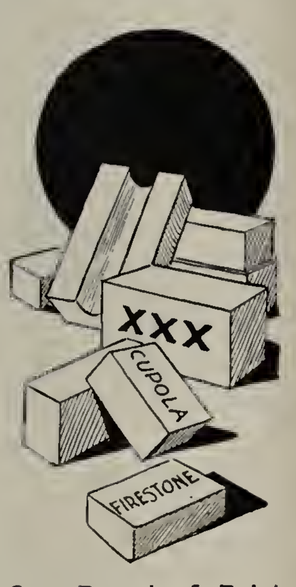
TAKES TIME TO ACQUIRE KNOWLEDGE

You will not learn this in a year, or even two years, or possibly three or four years, but it will require a long time for you to get this information. Most fire brick manufacturing concerns spent years of time educating men to go out and sell their products. From now on it will be necessary for them to spend a great deal more time and money because in many cases they will need skilled technical men, who will make a study of this or that kind of work. Most of these manufacturers use great care in recommending their material and desire to be sure, that in their best judgment the brick will serve the purpose before they offer it.

Canvass Industries in Your Market

GET CLOSE TO MANUFACTURING END

In your capacity as a salesman for the fire brick manufacturers you will be obliged to get very close to the operating end of the business, get a thoro knowledge of the conditions surrounding the manufacture and the brands made by that concern. You should know something about the heat resisting power of the brick and their ability to meet rapid heating and cooling. You should also know the effect of certain gases or slags on them. You should acquire full knowledge of their ability to sustain a certain load under a given temperature. You will need to know all about their ability to withstand friction and various other factors. You will need to know where these brick have been used successfully and where they have failed. You will have to take the same position the producer's own salesman takes when he goes to the plant to sell. You will have to make inquiries as to the suitability of a brick for this or that purpose, but that is only part of your duty. You will then need to go to the plants where these brick are used, study those conditions and use your best judgment. Report those conditions to the manufacturer and be sure to have the utmost confidence in him so you may lay all these matters before him and allow him to decide whether his brick will or will not give good results in this or that place. Conditions differ so much that it is impossible at the present time for any manufacturer to lay down a set of rules which will govern your work. We will take in the case of boilers, of which we have all types. We find large and small ones, some are high pressure, others low pressure, some fed by stokers, some by hand, some are operated under mechanical draft and others under natural draft, some use coal, some oil and some gas, and every one of these conditions has a bearing on the proper quality of fire brick to use. The same is true in foundries where cupolas are operated. One cupola may use a certain mixture of iron and a certain kind of coke, while another may use an entirely different mixture of iron and coke. There are dozen and dozens of changes in conditions even in the same plant. Of course, the matter of selling fire brick for a bake oven or fire-place or something of that nature is a very simple one, but when you reach the actual selling of fire brick in steel works, iron works, gas works, glass works, or thousands of other industries, it becomes one where knowledge is necessary and caution must be exercised.



One Brand of Brick Not Enough

I assume you are now ready to ask "What is the remedy?" I do not claim to have the ability to tell you what the remedy is, but I do believe I can offer some suggestions worthy of your consideration.

REMEDIAL SUGGESTIONS

First, if your purpose is to sell fire brick in your market, allow me to suggest that you make up your mind to sell them not as wholesalers but as retailers. That does not necessarily mean you should confine your efforts to less carloads, but confine your work to your local market and to such trade as you can actually meet in an economic manner.

Second, look over the ground, make up your mind what concern or concerns you care to represent. You should bear in mind that they all have good brick and that they can supply part of your trade, but no concern can supply all demands. Do not undertake to supply the products of too many manufacturers but if the sale of the brands of one or two concerns can be arranged for, arrange same and leave all others alone. Tie up to them and have faith in them. Make up your mind you are going to sell their products for years and no others.

(*Continued on Page* 994.)

An OUNCE *of* PREVENTION *is* WORTH *a* POUND *of* CURE

Some Facts About the National Safety Council—the Leading Accident Prevention Organization of the World

TO HAVE SAVED the lives of five thousand workmen in four years is not only a noteworthy achievement, but one which carries an almost endless train of beneficial results. These men today are playing their part in the production of raw and manufactured material so necessary in these times of war. Their wives and families still have the support of the breadwinner. A great economic loss has been averted. There are five thousand fewer graves.

This record—according to Dr. F. L. Hoffman, statistician of the Prudential Insurance Co. of America—has been brought about by the National Safety Council since its establishment in October, 1913, and represents the collective effort of its 3,600 members, consisting of industrial plants, railroads, public utility companies, insurance companies, state labor commissions, chambers of commerce, manufacturers' organizations, etc. These members are in all states of the Union, and in eleven foreign countries.

EDUCATIONAL WORK FAR-REACHING

The originators of the council recognized that if the organization was to prosper and really make an effective onslaught upon the needless waste of life and limb in the industries, public places and the homes, it would have to provide working plans for conservation—it would have to make plain to men in high places and in low places that accidents were a waste which could be stopped—and have to carry on its propaganda and service work in a far-reaching and methodical way.

The National Safety Council has made its own history. It had no criterion to guide it. But, forty-eight months ago it had, as it has in far greater measure today, the wise foresight and guidance of a board of directors and executive committee. Each of these men know the problem of the coucil, and give unstintedly of their best to assist in its solution.

The accident prevention situation is simple in its summing up: 25 per cent. of accidents may be prevented by mechanical safeguarding; and 75 per cent. of accidents may be avoided by organization and education of the workmen.

There is still an opinion, happily decreasing, that "guards" are the be-all and end-all of accident prevention work. A manufacturer may feel satisfied when he has installed such guards as the law or other agency demands. In reality he has only begun to meet the situation. If the employer and the workmen do not realize that carelessness and thoughtlessness cause the great majority of all accidents, then casualties will continue.

It thus follows that every workman must be educated to the dangers of his work. He must be taught to instinctively "Think Safety." He must realize that "taking chances" brings the inevitable penalty. He must not only be careful for himself—he must be careful for the safety of his fellows. In carrying on this campaign of education, it is necessary to have the co-operation of the employer, the manager, the superintendent, the foreman. There must be no apathy on the part of those "higher up." Workmen are quick to sense such indifference. Its effect is demoralizing.

SAFETY COMMITTEES MUST SPREAD GOSPEL

Collective effort is essential in this education process. Safety committees, on which the workmen are represented, must carry the gospel of safety thru a plant. Unsafe machines and conditions must be located and remedied. The thoughtlessness must be admonished. Conditions which may cause accidents must be anticipated and corrected.

How does the National Safety Council meet the need for supplying the medium to make safety a real living thing? A logical question, which must be logically answered.

BULLETINS IN PICTURE LANGUAGE

To make workmen realize what accidents mean to them, the National Safety Council issues to its members three different bulletins every week in the year. These give pictures of accidents which have happened—the consequences of neglect to attend to slight injuries—the folly of "taking chances"—and right and wrong practices in every-day duties. The majority of these bulletins are illustrated, and the reading matter is reduced to a minimum. Pictures are a universal language, and the purpose of the bulletins is to present facts graphically and in such a way that their import is readily grasped. These bulletins are placed on simply-made bulletin boards thruout the various departments of a plant, where the men have easy access to them.

The bulletins are changed weekly; the men's interest is thus kept alive—the psychology of the "repeated impression" has full sway.

Some of the bulletins give simple lessons in the conservation of health and fitness—and others are homely talks on the war situation and the patriotism of "being careful" so that a man may be kept safe and sound for his country's sake, and for that of the men in the trenches overseas.

For the men entrusted with the executive end of safety work, there is one bulletin a week, telling what to do and how to do it. These particular bulletins are the cream of the country's experience in accident prevention, and form a simple means of placing the collective experience at the disposition of the individual plant.

BULLETINS EVERY WEEK

The bulletins as sent out every week are accompanied by a helpful letter from the headquarters of the National Safety Council, containing a helpful thought or experience.

To assist executives and mechanical departments in the best means of making conditions mechanically safe, the National Safety Council issues one "safe practices" pamphlet every month. Ten of these have already been distributed, and deal with: "Ladders;" "Stairs and Stairways;" "Boiler-rooms;" "Crane Construction and Safe Practices;" "Belt Shifters and Belt Shippers;" "Belts and Belt Guards;" "Knots, Bends, Hitches and Slings;" "Shafting, Couplings, Pulleys, Gearing;" "Engine Guarding and Engine Stops;" and "Oiling Devices and Oilers." Others are in regular process.

These safe practices pamphlets in draft form are submitted to a committee of fifty prominent safety engineers in all parts of the country for suggestions and criticisms. The mass of suggestions and criticisms is then submitted to a committee of review of five, who pass upon all matters. Only then are the pamphlets printed. They are as correct as human ingenuity can make them.

A monthly "News Letter"' to members condenses the best of current news and ideas in the safety world.

Special bulletins are sent to members engaged in certain well defined industrial groups, such as metal trades, woodworking, paper and pulp, etc. The council has within it fourteen such sectional organizations, and the bulletins deal with the specific "trade" hazards of each group. These bulletins thus amplify the general bulletin service already described.

MOTION PICTURES USED.

Safety motion pictures and lantern slides dealing with all phases of safety work are lent by the council to its members. Moving pictures play a great part in the campaign of safety education.

It may here be asked: "While this service, as outlined, is interesting, it is in a sense general. What must I do if I want to know what kind of a guard or device will overcome troublesome conditions in my plant? What form of safety organization should I adopt? Where can I get good safety goggles, or a hundred and one other devices now marketed? What are the pros and cons of medical examination of employes? In fine, I have many safety problems to overcome. I need advice, counsel, guidance. What can the Council do for me?"

The answer to every specific accident problem is in the Information Bureau and Library of the National Safety Council.

This bureau and library, in charge of two experts, has thousands of items cataloged and indexed in such a manner that the answer is readily forthcoming. Approximately three hundred consultations are made of the bureau every month. There is a solution to practically every accident prevention problem, and the bureau has it, or can get it promptly.

Many members of the National Safety Council have declared that this feature of the council's service is alone worth the entire amount of annual dues.

Members of the council in thirty-nine different cities and districts of the country are grouped into "Local Councils," which hold monthly meetings where common problems are discussed and solved, safety motion pictures shown, and a helpful co-operative spirit manifested. These councils are regularly aided in their work by the field secretaries of the National Safety Council.

ANNUAL CONGRESS YEARLY

Once a year, in October, an annual congress of the National Safety Council is held. The 1913 congress was in New York City; that of 1914 in Chicago; that for 1915 in Philadelphia; that in 1916 in Detroit; that in 1917 in New York City; and it has now been decided that the 1918 congress will take place in St. Louis, Mo. Thousands of the council's members and others attend these congresses. They are the annual event in safety, affording, as they do, yearly tonics for freshened energy in carrying on accident prevention work. The proceedings of each congress are printed and distributed to members. The volume for 1917 contains 1,550 pages. As a work of ready reference it is unsurpassed. Like its predecessors it deals with facts, not theories. These proceedings have been aptly described as "The Bible of Safety."

Every director, each executive committeeman, all officers of sections and local councils, give their services to the National Safety Council free of all charge. The only salaried officials are the general manager and his staff. A large proportion of the dues of each member is returned to him in actual service rendered, the modest margin remaining pays the overhead expenses of the organization, and finances the continual development of its activities. The organization is owned by its members, and operated and controlled by them thru the directors and executive committee.

Every manufacturer who has the welfare of his employes at heart, and who realizes that "accident prevention is efficiency and that efficiency is accident prevention" should be a member of the National Safety Council. The organization is only too glad to present convincing proof of the value of its service, and a letter to W. H. Cameron, general manager, National Safety Council, 208 South La Salle street, Chicago, Ill., will bring all details and sample bulletins, etc., by return mail.

* * *

Eastern Housing Problem Serious

Lack of houses in a score or more of New York cities where hundreds, and in some cases thousands, of workmen have been drawn for work in munition factories, is threatening to hamper war work in this state. This condition is being severely felt at Buffalo, Troy, Syracuse, Ilion, Watertown, Mohawk and Schenectady, and to a greater or less degree in every city, town or village where there is a "war industry."

A skilled mechanic living in the central part of the state, had been told skilled mechanics were badly needed at an aeroplane factory in Buffalo. Influenced mostly by patriotic reasons, he went to Buffalo, and secured a position, intending to move his family there as soon as possible. He was unable to get a boarding house or rent a house or apartment anywhere near the plant. He finally secured one several miles away and spent on an average of two hours per day going and coming, on the street cars. The street car service at this time was not all it should be and he became disgusted, quit the position and returned to his former job. The government lost the services of a skilled man.

The same thing is happening in other cities. The government has recognized it and is planning to lend financial aid to some communities to build houses for workmen. This is to be done at Watertown, N. Y., where homes for nearly 7,000 additional workmen at the New York Air Brake plant must be found immediately. The government is now considering plans for a loan of one and one-half million dollars to build an entire village near the plant and rent it to the men with the privilege of purchase if they desire, the rent to apply on the purchase price.

At Ilion, N. Y., is located the Remington Arms & Ammunition Co., a huge typewriter plant and several other industries which, since the war began, are employing more than 13,000 men. This number is greater than the entire population of Ilion before the war. These men are living anywhere and everywhere they can find a place between Syracuse and Albany, and commuting. The Ilion Board of Trade has been considering a building corporation or a loan corporation to finance the construction of new houses, but as yet nothing has been done.

Director of housing and transportation of the department of labor, Otto H. Eidlitz, has sent communications to several "war boom" towns. He says in one part of his letter: "Communities whose populations have been abnormally increased by the war work, are urged to make every effort to house their workers without seeking aid from the government. Householders are asked to open their homes to boarders to meet the war emergency and warning is given that lack of housing is certain to affect additional contracts to plants in crowded neighborhoods."

A business man discussing this letter, cited the case of Troy, N. Y., where the Chamber of Commerce pushed forward a plan for a $200,000 corporation to build houses immediately to take care of the great influx of workers. Schenectady is another example where something along the same lines is being worked out.

In Syracuse, no official action has yet been taken. There are a number of large machine shops there, together with a powder and acid plant that has enormous government contracts and has doubled and it is believed, almost tripled its force of workers since the war began. Houses there are very scarce, as well as apartments, and even rooms. Rents have been increased twice in two years.

The outlook for industrial activity in the cities of the state for years to come is very encouraging. No one knows when the war will end. One guess is as good as another, but should the war end tomorrow, it is pointed out that there will be a reconstruction era, and that the demand for supplies from this country will be even greater than it is at the present time.

Added to this is the restriction in building that has prevailed for some time. As soon as the war stops and prospective builders are certain of where they are coming out, building will start with a rush, is the opinion of contractors and building supply dealers everywhere in this section.

* * *

WHEN *a* CONSIGNOR MUST PAY *the* FREIGHT

PRACTICALLY EVERY SHIPPER is familiar with the fact that the terms printed on the standard form bill of lading include the following provision: "The owner or consignee shall pay the freight and all other lawful charges accruing on said property, and, if required, shall pay the same before delivery." There is, however, no mention as to who shall pay the freight in case the consignee refuses to accept the shipment thru no fault of the railroad company. It is when this condition occurs that disputes and controversies arise concerning the consignor's liability for the freight charges.

These disputes and controversies arise out of misinterpretations of the terms of the bill of lading, or thru lack of knowledge concerning the railroad company's rights in such a case. If the consignee refuses to receive the shipment thru no fault of the railroad company, thereby disclaiming ownership of the property, and the railroad company brings suit to recover freight and storage charges, such suit must of course be against the shipper or consignor of the goods; for only in this manner can the railroad company receive compensation for its service, unless it disposes of the goods transported with a view to recovering the freight and other lawful charges.

An important case of this nature was decided quite recently in one of the higher courts. In this particular instance the consignor, The Palace Company, delivered to the railroad company a load of goods for transportation to one John Weeks, the consignee. A bill of lading in standard form was issued for the shipment, signed by the consignor and by the railroad company's agent. The goods were transported in accordance with the terms printed on the bill of lading.

CONSIGNEE REFUSES SHIPMENT

When the shipment arrived at its destination Weeks was notified by the railroad company. He refused to receive the goods making up this shipment; not, however, on account of any default or neglect of duty on the part of the railroad company, for the goods were in apparent good condition. The consignee, of course, would not pay any freight charges on goods that he refused to receive or disclaimed to own.

The railroad company, thru its agent, promptly notified The Palace Company of Weeks' refusal to accept the shipment, also asking for further shipping instructions. The Palace Company paid no attention to the requests for shipping instructions, nor to the requests for settlement of the freight and demurrage charges. In its last letter to the consignor the railroad company said: "Unless you arrange for payment of these charges we will have to dispose of the shipment with a view of recovering them, and, if we do not, look to you for the deficit." The consignor did not reply to this letter, so the railroad company elected to place the shipment in storage at the consignor's expense, and also brought suit to recover the freight and demurrage charges.

SHIPPER LIABLE FOR FREIGHT

In stating its defense to this suit The Palace Company relied upon the clause printed on the bill of lading, which is to the effect that the owner or consignee is liable for freight and all other lawful charges. The Palace Company further claimed that it was not the owner of the goods at the time of shipment, as the title of ownership to the goods had passed to the consignee as soon as they were delivered to the railroad company's agent and accepted for shipment. This was maintained on the principle that when goods are sold they become the property of the buyer as soon as the seller has delivered them to the carrier for transportation and delivery.

The Palace Company could not, however, escape liability for the freight and demurrage charges incurred for this shipment, and in the following opinion the Court gives a number of logical reasons why the consignor, in a case of this nature, must pay the freight.

The Court said: "We can entertain no doubt that the shipper of the goods is liable to pay the freight and all other lawful charges accruing against the property incident to the shipment. The carrier's contract and right to recover compensation for his services arise from the circumstances of his employment. He has the right to look for his compensation to the party who required him to perform the service.

"Where goods are shipped by a consignor under a contract, or for his benefit, he is originally liable for freight, and that the insertion in a bill of lading of a provision that the goods are to be delivered to the consignee, etc., 'he or they paying freight', will not of itself relieve him from that liability; that provision being designed for the benefit of the carrier, he may waive it if he chooses so to do, and resort to his employer, the consignor, for his freight.

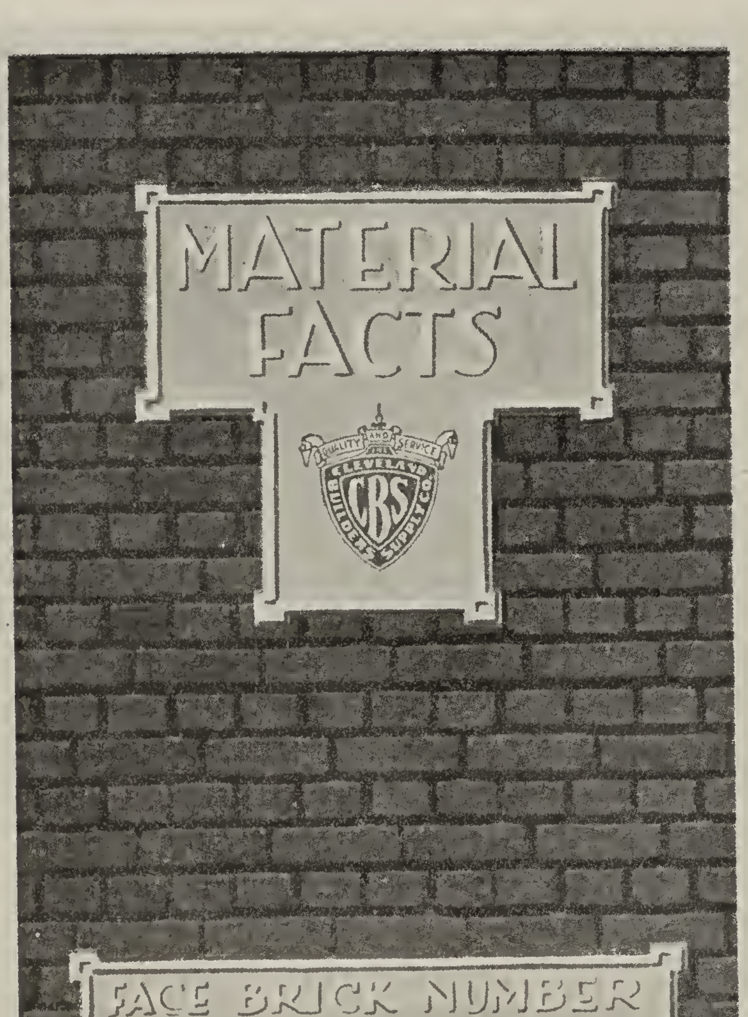
"We do not think the carrier's contract and right to recover his freight can be made to depend upon what may prove to be the legal effect of the negotiations between consignor and consignee upon the title to the property which is the subject of transportation."

Thus it is very evident that when a consignee refuses to accept a shipment it is to the consignors financial interest to delay as little as possible in either inducing the consignee to accept the goods, or if that is not possible, to inform the railroad company of the disposition to be made of the shipment. Such action will often save considerable sums of money that might otherwise go for storage and demurrage charges; for, as the court plainly stated, the consignor can not escape liability, since he is the party who originally ordered the railroad company to transport the goods.—*Ralph H. Butz.*

* * *

Dealer Boosts Brick

The Cleveland Builders Supply Co., of Cleveland, Ohio, has a house organ known as "Material Facts," which is issued monthy, and which contains from time to time some very valuable information for the consumer of building materials.



The March issue of "Material Facts" is a face brick number, and contains some very good advertising for brick. Photographs, together with an accompanying description, are shown of a number of local operations which have taken large quantities of brick.

"Putting Up a Good Front" is the subject of a few pointed paragraphs which read as follows:

"Don't hide your light under a bushel. If you have a good thing, tell the world about it. If you are prosperous, look the part. If you are happy, smile. If you are handsome, keep well groomed.

"In other words, the world judges largely by appearances, and honest merit and success doesn't need to be camouflaged. And to carry the argument to inanimate objects—if you erect a good building, make it look the part. To use the vernacular, 'put up the best front possible.'

"The 'best front' is of face brick. Nothing confers more beauty, character and distinction than the right face of brick. There is nothing in the building line that more effectually combines the greatest utility with the highest art."

However, the rarest gem of all, is a poem written by E. C. Roberts, of the Cleveland Builders Supply Co. This poem is written in Italian vernacular and reads as follows:

Tony Says "Build Weet Breecks"

All-a my life, seence I was seex
I'm tell-a folks, "A-build weet breecks."
Dose house ees mooch-a fire proof
Eet look-a nice from cell' to roof
Anodder t'eeng, you nevaire ain't
A spend da mon' for buy da paint.

A breeck house ees, in town or farm,
In Summaire cool, een Weentaire warm.
Eef ol' or new, eet look-a good
Mooch bett-a dan dees house-a wood.
A breeck house ees joost lak a man
For long time 'go, when world be-gan
God made-a man from dust an' clay,
An' breecks ees made from dees to-day.
We know God t'eenks man ees a-good
So breecks mak' bettaire house dan wood.

* * *

New Magnesia Factory

The Harker Co., for many years identified with the mining of California magnesite has opened up what is reported to be one of the largest factories for making magnesia from magnesite, in the United States. The plant is located at Guerneville, Cal., near which place the company has been opening up extensive holdings on Gillman Creek. These holdings embrace eighty acres and contain what government experts have reported to be the largest deposits of magnesite in the state.

The factory, which is to have an initial daily capacity of five tons, is being equipped with the most up-to-date devices. A new rotary drying system, which is meeting with favor in the East, is being installed, and is the first one on the west coast so far. It is said to obviate the cumbersome drying sheds, and cut the time of drying in half. One vertical kiln is the initial roasting unit, but it is said that it will soon be necessary to install a second one. Fuel oil will be used for firing the steam plant. The company operates its own sawmill for the lumber for building operations. The hauling so far has been done by teams, but as soon as the plant is placed in operation, a train of motor trucks will be necessary to keep the rocks coming down in sufficient quantities.

EFFICIENCY *in* CAR LOADING

WE SHOW in this article a table that one fire brick company is using to promote and insure maximum efficiency in loading cars. Paving and building brick companies generally load cars by putting in a certain number of wheelbarrow loads. Manufacturers of lower grade fire brick usually do the same. It is the custom, however, among manufacturers of face brick, high-grade clay fire brick, silica brick and brick of the higher grades of refractories, to load cars as nearly level for the full length of the car as possible. The manufacturers of high-grade refractory brick, therefore, count each row and mark the number of brick on top.

TABLE FOR LOADING FOREMAN

			End of Car		Center	
Inside Length Feet	No. of Brick Wide	Cap. Tons	No. of Rows	No. of Brick High	No. of Rows	No. of Brick High
34	37	30	25	7	19	6
		40	36	9	8	8
		50	44	11	0	—
	38	30	17	7	27	6
		40	26	9	18	8
		50	31	11	13	10
	39	30	10	7	34	6
		40	16	9	28	8
		50	19	11	25	10
	40	30	3	7	41	6
		40	7	9	37	8
		50	7	11	37	10
36	37	30	7	7	40	6
		40	12	9	35	8
		50	14	11	33	10
	38	30	47	6	0	—
		40	2	9	45	8
		50	47	10	0	—
	39	30	39	6	8	5
		40	39	8	8	7
		50	36	10	11	9
	40	30	33	6	14	5
		40	30	8	17	7
		50	25	10	22	9
38	37	30	39	6	11	5
		40	38	8	12	7
		50	34	10	16	9
	38	30	32	6	18	5
		40	28	8	22	7
		50	21	10	29	9
	39	30	24	6	26	5
		40	18	8	32	7
		50	9	10	41	9
	40	30	18	6	32	5
		40	9	8	41	7
		50	50	9	0	—
40	37	30	24	6	29	5
		40	17	8	36	7
		50	7	10	46	9
	38	30	17	6	36	5
		40	7	8	46	7
		50	47	9	6	8
	39	30	9	6	44	5
		40	50	7	3	6
		50	35	9	18	8
	40	30	3	6	50	5
		40	41	7	12	6
		50	24	9	29	8

The accompanying table is designed to load cars in this way, so that when finished they will contain the full allowable ten per cent. over marked capacity. Only three marked capacities are taken into account, thirty, forty and fifty ton. Likewise only four lengths are considered, thirty-four, thirty-six, thirty-eight and forty feet. Of course, these are all inside lengths. The width of cars varies and, therefore, this table is figured for four widths, taking thirty-seven, thirty-eight, thirty-nine and forty brick respectively. A car thirty-four feet long will hold forty-four rows of full sized nine-inch fire, silica or high refractory brick, one thirty-six feet long forty-seven rows, one thirty-eight feet long fifty rows and one forty feet long fifty-three rows.

The following method has been used in figuring this table. The number of rows of brick in the car has been multiplied by the number of brick in width. This result has been divided into the number of brick to be loaded. In every case the result is a quotient and a remainder. The quotient shows the number of brick in height at which the center of the car is to be loaded. The answer received by dividing the number of brick in width, into the remainder spoken of above, will show the number of rows that must be loaded one higher than the center of the car. For example, suppose we have a thirty-six foot car of forty-ton capacity and it will take thirty-nine brick across.

39 brick× 47 rows = 1,833
14,350 brick× 6.1 pounds=87,353
14,350 brick÷1833 = 7

times with a remainder of 1,519. This means that the center of the car must be seven brick high and that enough rows must be eight high on the ends to add 1,519 brick; 1,519 divided by 39 gives 39 rows. In other words, with a brick weighing 6.1 pounds and a car of these dimensions, if thirty-nine rows are loaded eight high and the remaining eight rows seven high, the car will contain a few brick more or less than 14,350. By this method it is easy to make a table for brick of any average weight. Moreover cars of odd sizes or capacity not found on this table can easily be figured.

Fire brick or silica brick shapes can be loaded by this same method, but allowance must be made whenever a shape is oddly shaped enough to take up more space than solid brick. The car can be loaded five per cent., ten per cent. or even twenty-five per cent. higher.

CARS LOADED TO ALMOST FULL CAPACITY

This table is in use in one factory where the monthly average will show that the cars are loaded up to within a few pounds of the full allowable capacity. It has been obtained and is published to assist other plants to load equally heavy. Everyone knows the condition of the car situation. When it is known that nine cars loaded to 66,000 pounds will carry the same as ten cars loaded to 59,400 pounds, it will be readily understood that brick plants can easily benefit themselves as well as assist in the government plan for conservation of transportation facilities, by adopting a table of this kind, and handing it to their loading foreman, for his guidance and use.—*A. J. Huac.*

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Refractory Brick of Dolomite

A dolomite refractory brick and a process for making it is covered by a patent (U. S., 1,248,486) granted to James O. Handy and Robert M. Isham, of Pittsburgh, and assigned to the Allen S. Davison Co., of that city. They make use of the dust and fine materials produced in granulating calcined dolomite for making refractories for basic open-hearth furnaces, either alone or mixed with other materials. This waste dolomite is dead burned as it comes and is afterward submitted to a brick-making treatment and another dead burning, producing strong, dense and refractory brick. It is stated that they show no tendency to slack when placed in boiling water. For burning it is a matter of convenience to add more or less water to the dust to ball it up and form aggregates which can be handled in a rotary kiln which is well adapted for this first burning.—*Iron Age.*

Halt the Hun with War Savings Stamps

CURRENT LEGAL DECISIONS
AFFECTING BUSINESS

It is the Purpose of This Department to Serve to the Manufacturer of Clay Products a Brief Digest of Decisions Which Have Been Handed Down in the Courts During the Month, Enabling Him to Keep in Close Touch With Legal Developments

SLANDERING BUSINESS

Language which does no more than to disparage the property of another or the quality of the articles which he manufactures or sells is not actionable unless special damages are alleged and proved; but, if the language disparaging the property of another also involves an imputation upon him in respect to his trade, business, or profession, then the language becomes actionable per se, and it is unnecessary to allege or prove special damages.—166 P. (Ore.) 33.

AUTHORITY OF CORPORATION OFFICERS

Where a corporation had for a number of years intrusted the general management of its business to its secretary, who had on various occasions executed promissory notes to a bank in the name of the corporation, the proceeds of which had been placed to the credit of the corporation on the books of the bank, and checked out by him, the corporation will be estopped to deny his authority to execute a promissory note when sued thereon by the bank.—166 P. (Okla.) 119.

RAILROAD COMPANY AS INSURER OF BAGGAGE

Where a railroad received a trunk to be transported as baggage, which it promptly did, its agent at destination taking charge of the trunk on arrival at 1 p. m., and being immediately ready, willing, and anxious to deliver to the passenger, who had arrived on the same train, and the agent remained at the station until 5 p. m., continuing ready, willing, and anxious to deliver to the passenger, who did not call for the trunk, so that the agent, at 5 p. m., the usual hour of closing, placed the trunk in the railroad's warehouse, carefully and securely locking it up, the liability of the road as an insurer for the safety of the trunk ended.—75 So. (Ala.) 885.

INCOME—WHAT CONSTITUTES

In its ordinary and popular meaning, "income" is the amount of actual wealth which comes to a person during a given period of time, and in most, if not all, connections the word involves time as an essential element in its measurement or definition. "Income" may be derived from capital invested or in use, from labor, from the exercise of skill, ingenuity, or sound judgment, or from a combination of labor, business, or property; commercial revenue, or receipts of any kind, including wages or salaries, the proceeds of agriculture or commerce, the rent of houses, or the return on investments; of the amounts of money coming to a person or corporation within a specified time, whether as payment for services, interest, or profit from investment, its usual synonyms being "gain," "profit," "revenue."—116 N. E. (Mass.) 904.

UNDUE INFLUENCE

Solicitation, importunity, argument, and persuasion are not "undue influence" sufficient to avoid a contract. Influence obtained by persuasion and argument, or by appeals to the affections is not prohibited and may be termed "due influence," and it is immaterial that the parties stand in confidential relations to each other. The line between "due" and "undue" influence when drawn must be with full recognition of the liberty due every true owner to obey the voice of justice, the dictates of friendship, of gratitude, and of benevolence, as well as the claims of kindred, when not hindered by personal incapacity or particular regulations, to dispose of his own property according to his own free choice. Influence obtained by flattery, importunity, superiority of will, mind, or character which gives dominion over the will of another to such an extent as to destroy his agency, or constrain him to do against his will what he is unable to refuse, is "undue influence."—166 P. (Ore.) 47.

CHATTEL MORTGAGE ON MERCANTILE STOCK

Where a mortgagor of a stock of merchandise is expressly or impliedly given authority to continue in business, necessarily disposing of goods from time to time, the mortgage is void as to the mortgagor's present and subsequent creditors.—75 So. (Ala.) 894.

REFUSAL TO RECEIVE GOODS

In action for breach of contract in refusing to receive goods sold, plaintiff's damages are measured as of the date of breach; for he cannot delay until there is a change in the market, and place the loss upon defendant, but must be reasonably active to save himself from loss.—116 N. E. (Mass.) 901.

FULL REQUIREMENTS CONTRACTED FOR

Where seller agreed to supply buyer's full requirements, the buyer could not use the contract for the purpose of speculation in a rising market, and both parties must act reasonably and in good faith, and use the contract for purposes within the contemplation of the parties.—166 N. Y. S. 4.

BILL OF LADING TO SHIPPER'S ORDER

A bill of lading, issued to shipper's order, notify a third person, signifies the shipper is consignee, and that the third person is to be notified on arrival of the shipment, and delivery to such person without requiring him

Who Saves Serves.

to produce the bill of lading is a conversion by the carrier.—196 S. W. (Mo.) 379.

ACCEPTANCE OF GOODS FOR SHIPMENT

There can be an acceptance by a carrier's agent of goods for shipment binding on it, as regards liability for their loss, tho no receipt is issued therefor, notwithstanding book of instructions issued by carrier to employes requiring a receipt to be given for goods when received. —101 A. (Vt.) 209.

CONSPIRACY IN RESTRAINT OF TRADE

The Federal Supreme Court will not hold that the usual devices of labor unions to prevent, by concerted action, the use of nonunion-made materials, may be made the ground of an injunction under the New York anti-trust laws, in the absence of a decision of the highest state court to that effect.—37 Sup. Ct. (U. S.) 718.

SALE TO AGENT OF UNDISCLOSED PRINCIPAL

When a third person on his own credit purchased furniture from plaintiff as agent for defendant, and delivered it to defendant with the intention that defendant should pay for it and own it, title passed immediately to defendant on delivery, and the transaction was an unconditional sale to an undisclosed principal, altho plaintiff could sue either on discovering the agency.—166 N. Y. S. 112.

CONSTRUCTION OF CONTRACT

The primary rule in the construction of contracts is that the intention of the parties is to be sought and carried out whenever possible, and where the contract is in writing and the language is unambiguous, such intention must be ascertained from the language of the contract as written; but where language is ambiguous, explanation of such ambiguities is permitted by parol testimony.—196 S. W. (Tex.) 583.

COMPROMISE AND SETTLEMENT

A settlement and compromise of a claim asserted on reasonable grounds and in good faith, which the parties, having equal knowledge of the facts, consider doubtful, constitute a new and valid agreement, which will be enforced in law, altho the matter compromised be not in fact doubtful in legal contemplation, and the settlement be not what a court would have adjudged upon the facts of the case.—166 P. (Ore.) 53.

SPENDTHRIFT TRUSTS

A spendthrift trust may be created as well for a woman as for a man.—101 A. (Pa.) 756.

DESTRUCTION OF BOOKS OF RECORD

The rule that all things are presumed against the spoliator has always been applied with its utmost rigor and sternness.—197 S. W. (Mo.) 371.

JOINT STOCK COMPANIES

A joint-stock association is not a citizen, and its status in the federal courts must be judged by the citizenship of its members.—243 F. (U. S.) 555.

NOTICE TO RESCIND CONTRACT

A notice for the rescission of a contract must be clear and unambiguous and convey an unmistakable purpose to insist on the rescission.—101 A. (Pa.) 844.

REVIVAL OF DEBT DISCHARGED IN BANKRUPTCY

In order to revive a debt discharged in bankruptcy, a promise to pay the same must be clear, distinct, and unequivocal.—176 P. (N. M.) 274.

RELEASE OF DEBTOR

The voluntary release of his debtor, by a creditor not having the means to pay debts is void as to the creditors of the latter.—101 A. (Md.) 777.

SALES ON CREDIT

Actual delivery and payment are not necessary to transfer the title to goods sold, as goods may be sold on credit and without delivery, if the parties so intend.— 101 A. (Pa.) 741.

CONCEALMENT BY BANK DIRECTOR

Knowledge by a director of a matter affecting his bank, which his personal interest would prompt him to conceal, cannot be imputed to the bank.—93 S. E. (W. Va.) 338.

DOING BUSINESS WITHIN STATE

An isolated or single sale of goods in a state by a foreign corporation, or even occasional repetitions of such sales, is not doing business within such state.— 243 F. (U. S.) 706.

REPRESENTATIONS CONSTITUTING FRAUD

As a rule false representations, to constitute fraud, must relate to some material past or existing fact, and not to mere promises or statements of intention.—243 F. (U. S.) 289.

LIABILITY OF INDORSER ON NOTE OF BANKRUPT

The bankruptcy of the makers of the note does not release the indorser from liability for interest which accrued after the makers were adjudged bankrupts.—166 N. Y. S. 739.

FRAUDULENT CHATTEL MORTGAGE

A chattel mortgage fraudently taken in name of third person as mortgagor to deceive public is void, and its record not notice to subsequent purchaser.—93 S. E. (S. C.) 327.

INDORSER WITHOUT RESTRICTION

The obligation of an indorser without restriction is that the note shall be duly honored, and that, if it is not and he has notice thereof, he will pay the amount to the indorsee.—166 N. Y. S. 739.

THREATS

A "threat" is any menace of such a nature and extent as to unsettle the mind of the person on whom it operates, and to take away from his acts that free and voluntary action which alone constitutes consent.—243 F. (U. S.) 785.

ALIEN ENEMIES

An alien enemy resident in his own country is under disability during the war to institute and maintain a suit in this country, but this disability does not attach to alien enemies resident in this country.—243 F. (U. S.) 621.

MEANS OF KNOWLEDGE

The means of knowledge is the equivalent of knowledge, a rule applying when the circumstances of the case impose the duty of a reasonable inquiry, and even where it is not required by the express mandate of the statute.—76 So. (Ala.) 453.

REFUSAL TO WORK WITH NON-UNION LABOR

Members of unions may, by agreement, refuse to work with nonunion labor, where the object is strengthening of their union, and not to injure the plaintiff, or nonunion men it employs, tho they are incidentally injured thereby.—101 A. (Conn.) 659.

DEBT DUE CITIZEN OF ENEMY COUNTRY

The state of war does not confiscate a debt owing by a resident to a nonresident citizen of an enemy country, tho it may suspend the remedies for its collection thru the courts or prohibit the transmission of the proceeds to the enemy country.—166 N. Y. S. 744.

PRIVATE AND COMMON CARRIERS

The distinction between a public or common carrier of passengers and a special or private carrier is that the former must receive all applying for passage, so long as there is room and no legal excuse for refusing passage, while the latter is not so bound.—166 N. Y. S. 640.

DUTY TO FURNISH CHANGE

A telegraph company must be prepared to furnish change to a reasonable amount to a person desiring to send a telegram and able to offer only a bank bill in payment; the reasonableness, with reference to amount, time, and place to be judicially determined.—166 N. Y. S. 740.

USE OF WORDS IN CONTRACTS

When persons, natural or artificial, use words in contract making falling short of or going beyond intention, they must abide by the result of their efforts, unless a new agreement supersede the failure, mutual mistake of fact be shown, or fraud be established.—243 F. (U. S.) 600.

FAILURE TO KEEP SYSTEMATIC BOOKS

While in some cases a bankrupt's failure to keep any systematic books or records would of itself require the conclusion that this was done with intent to conceal, such conclusion is not generally inevitable, and the inference is one of fact, to be drawn from the proofs in a particular case.—243 F. (U. S.) 171.

INTENT OF PARTIES AS TO PARTNERSHIP

As between the parties, whether a partnership exists is a matter of intention, and if they intend a joint enterprise in which they engage to possess the characteristics of a partnership, it is so, whatever they name it, while if they do not so intend, it is not a partnership as between them.—197 S. W. (Mo.) 356.

POWERS OF CORPORATION PRESIDENT

Where the president who was also the general manager of the corporation was authorized under its by-laws to transact its general business, his power to execute a note and mortgage and the legality of his acts will not be questioned, especially where he acts in good faith and there is not fraud.—167 P. (Utah) 350.

DIRECTORS OF CORPORATION

The directors must act together as a board, and the separate assent of a majority is not binding on the corporation, nor can they vote by proxy. The board of directors of a corporation may delegate any part of its powers to an executive committee whose acts may be made binding on the corporation.—197 S. W. (Ky.) 376.

ENLISTMENT OF MINORS

A minor's enlistment, without the written consent of his parent or guardian, when such consent is required, is not void, nor is it voidable by him, tho he may be released from the service by a timely application of his parent or guardian, having a superior right to his custody or control.—243 F. (U. S.) 664.

ABANDONMENT

The characteristic element of abandonment is the voluntary relinquishment of ownership, whereby the thing so dealt with ceases to be the property of any person, and becomes the subject of appropriation by the first taker; it being in that respect distinguished from all other modes by which ownership may be divested.—101 A. (Pa.) 863.

MONOPOLIES

An indictment for combining and engaging in a monopoly in restraint of interstate trade and commerce need not set out any overt act, as the combination or contract in any form in restraint of trade constitutes the offense under the statute, and it is only essential to charge the combination or contract.—243 F. (U. S.) 730.

SENDING GOODS ON CONSIGNMENT

Where goods are sent to a dealer under a consignment, if title is to be reserved in the consignor, the goods should be so marked or identified, or of such a character as not to deceive innocent parties dealing with the consignee upon the strength of his having such goods as a part of his ordinary stock.—243 F. (U. S.) 733.

TEST OF INSOLVENCY

Unlike the common law, one is not insolvent under the Bankruptcy Act when the fair value of his possessions exceeds the amount of his debts, tho he may not be able to discharge them when due in lawful money. Under the New York statute, "insolvency" is a general inability to answer in the due course of business the liabilities existing and capable of being enforced.—243 F (U. S.) 637.

FIRE ALARM SYSTEMS

Where defendant installed a fire-alarm system in plaintiff's plant, and agreed upon receipt of fire alarms to transmit them to defendant's engine room and fire hall, defendant was only required to exercise ordinary care, but the care to be exercised must be considered with reference to the surrounding circumstances, and, as any service but prompt service would be worthless, prompt service was required.—243 F. (U. S.) 481.

FILLING IN TIME OF PAYMENT IN NOTE

Where a demand note was blank as to the time for payment, and the blank was filled in so as to make it payable five months after date, there was a material alteration in the sense that it increased the obligation of the maker, as he could not pay the note before it was due, and thereby stop the running of interest, and as the statute of limitations only begins running from the date on which the note becomes due.—166 N. Y. S. 786.

BANKRUPT NOT ENTITLED TO DISCHARGE

A bankrupt, who was indebted to a bank and desired to renew notes when they fell due, executed more than a year before adjudication a statement in writing as to his financial condition, which was false. The bank permitted him to renew obligations as they fell due, and at the time of adjudication the debt was less than at the time when the statement was executed. The bank, relying on the statement, did not apply to the debts due it the balance due the bankrupt on hand at the time the notes fell due, and by reason of its failure the bankrupt's debt was greater than it would have been, had such balance been applied. Held, that the bankrupt was not entitled to a discharge.—243 F. (U. S.) 203.

Pledge Your Loyalty—Buy W. S. S.

The SUPERINTENDENT

Helpful Hints for Practical Men
Whose Problem is Maximum
Production With Minimum Cost

Storage Tank for Oil

The storage tank for oil should hold at least a carload of oil. A popular size is a 10,000 gallon tank, eight feet in diameter and thirty feet long. The tank should be equipped with a manhole, an opening for filling pipe, a suction opening, a vent opening, and an opening for steam heating coil connections. Insurance requirements call for the tank to be below the level of the pump, kiln and boilers. It should be not less than fifty feet from the nearest building. Because of its fluid nature, fuel oil is easily metered.

⁂

The Value of Shaft Couplings

Shafts sometimes break. When this occurs, it is well to be prepared and have a shaft coupling handy. To repair a broken belt is usually a simple matter, compared with repairing a broken shaft. In the former case you merely need some lacing, wire, or cement. In the latter case it is difficult to devise a makeshift in a short time. Hence the importance of having a coupling handy. The cost of a broken shaft may mount up seriously; wages are wasted, deliveries delayed, and the reputation of the man in charge is endangered. There are shaft couplings on the market that will easily mend an ordinary break in four or five minutes. These couplings are so made as to fit any shaft, and the union is made without throwing the ends out of alignment. They are also made without projecting screws; they look neat; and are amply strong. During a lull in operations the shaft may be mended permanently and the coupling removed in readiness for the possibility of future breaks.—*W. F. Schaphorst.*

⁂

Blasting Safely and Silently

If you have an old engine base or other mass of concrete to remove, in a place where blasting with powder might be dangerous, it is not always necessary to fall back on the hammer and chisel.

Instead of this laborious method, a silent blasting plan has been found effective. With a small air drill, drill holes on, say, two foot centers. Fill them with about a foot of lime, on which pour water, then more lime, and more water. Fill the hole to within about a foot of the top and ram with dry sand.

The expanding lime will break down the concrete more rapidly than you would think. Sometimes this has happened before the hole is completely filled.

If trouble is encountered from the lime pushing out the plug without breaking the concrete, another plan may be used successfully.

Drill a large number of small holes in a piece of iron or steel pipe. Put this pipe down the center of the drill hole and tamp lime around the pipe. Put a cement plug around the pipe at the top, and fill the pipe with water. This water flows thru the small holes into the lime, and the expansion takes place quickly.—*Factory.*

⁂

A Mortar for Outside Furnace Walls

The exterior or outside face of furnace wall work should be laid up in a mortar which will in a measure not only withstand the action of the weather, but should be able to withstand the degree of heat to which it is subjected at times without due cracking and crumbling.

The following mix has proven quite satisfactory in the experience of W. G. Worcester of the Standard Clay Products Co., Crawfordsville, Ind.: Four parts of sand (free from lime grains), one part of cement, and one part of fire clay or ground shale.

⁂

Coal Ash and Clinker Formation

The ash in a coal may be considered to come from two different sources: first, substances derived from the original vegetable material, and second, those deposited either during the laying down of the coal bed or subsequently, such as particles of clay, sand or shale. These cannot be separated from the coal by any commercial method. A third source includes extraneous impurities, those becoming mechanically mixed with the coal during the mining. Washing, screening and picking are used to remove them.

Ash is a mechanical mixture of silicates, oxides and sulphates in which the percentages of the different constituents vary greatly. The silicates, however, predominate in most cases. Coal ash is composed largely of silica (SiO_2), aluminum oxide (Al_2O_3), oxide of iron, either as FeO or Fe_2O_3, calcium oxide (CaO), and sulphur dioxide (SO_2). It also contains small percentages of magnesium oxide (MgO), sodium oxide (Na_2O) and potassium oxide (K_2O).

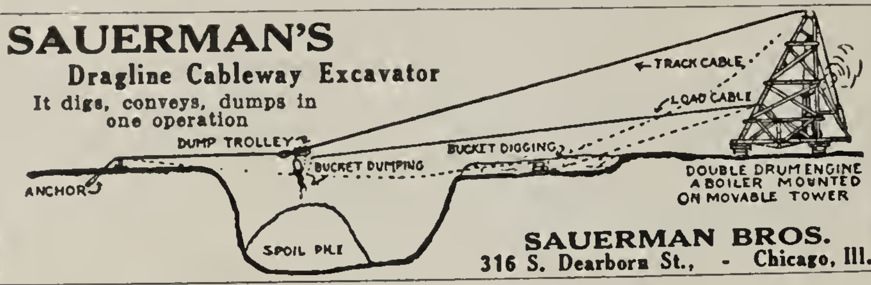
Clinker is formed by the mechanical adhesion of the particles of ash, or by the fusing of the ash, thereby forming slag. An ash having a fusing temperature above 2700 deg. Fahr. will rarely give trouble if the coal is properly fired.

Clinker is of two types, hard clinker and soft clinker. Hard clinker is formed by the direct melting of the ash, or of some of its constituents. It hardens while in the ash on the grates. If formed by a portion of the ash melting, it will be in the form of a large hard cake at some point on the grate. If formed thru certain constituents in the ash melting, it will be found as a number of small hard clinkers distributed thruout the ash. The caked hard clinker is usually the direct result of bad firing methods. The ash next on the grate is considerably cooler than the burning coal in the fire bed, so that an ash that will not fuse when next to the grate will fuse when raised into the burning coal of the fire bed. Once melted, it runs down, is cooled and hardened, cementing pieces of coal and ash

Lick a War Stamp and the Kaiser Too.

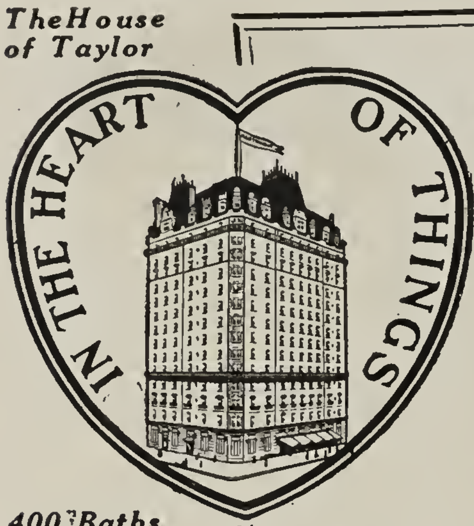
Anchor Brand Colors
For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
C. K. WILLIAMS & CO., EASTON, PA., U. S. A.
Correspondence solicited

SAUERMAN'S
Dragline Cableway Excavator
It digs, conveys, dumps in one operation



SAUERMAN BROS.
316 S. Dearborn St., - Chicago, Ill.

The House of Taylor


IN THE HEART OF THINGS

Hotel Martinique
Broadway, 32nd St., New York
One Block from Pennsylvania Station
Equally Convenient for Amusements, Shopping or Business
157 Pleasant Rooms with Private Bath
$2.50 Per Day
257 Excellent Rooms, with Private Bath, Facing Street, Southern Exposure
$3.00 Per Day
Also Attractive Rooms from $1.50
The Restaurant Prices Are Most Moderate
400 Baths
600 Rooms

ABSOLUTELY FIREPROOF
HOTEL CHELSEA
West Twenty-third Street at Seventh Avenue, New York City.
500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
Room with private bath, $2.00.
Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
To Reach Hotel Chelsea.
From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

W.S.S.
WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT

together. Small hard clinkers are formed by the fusing of certain ingredients of the ash. Usually they do not cause serious trouble. Any working of the fuel bed tends to cause partially melted or softened particles of ash to adhere to one another and thus to produce clinker.

Soft clinker remains molten while on the grate, but hardens when its temperature is sufficiently reduced. Once formed, the soft clinker continues to grow in size, until practically the entire grate is covered. It is formed by the slagging of the ash. It is not directly chargeable to bad methods of firing, altho this may start the formation and hasten its spread. Soft clinker may have a consistency varying from that of a thick paste to that of a very heavy oil. The more fluid clinker is, the more troublesome, because it spreads faster. When first formed, a soft clinker is similar in appearance to a hard clinker. Inspection shows that it has a crust on the upper surface, underneath which it is fluid. Soft clinker is formed by the silica of the ash combining with the base that has the lowest fusing temperature. Once formed, the silicate dissolves both the silica and the base, and in this way grows in extent. Silica is infusible at ordinary temperatures. The basic oxides of the ash are refractory materials, and are quite infusible at furnace temperatures. However, they act as fluxes for the silica, and promote the fusing. The silica acts as an acid flux, whereas the oxide acts as a basic flux.

The important factor in the consideration of clinker is not so much the total volume of weight of clinker formed as is the kind of clinker. Large amounts of non-adherent clinker are not particularly objectionable, while small amounts of clinker which form pasty masses give much trouble. Probably the only reliable basis at present for determining the objectionableness of a clinker is the judgment of the observer.

⁂

Plastic Baffle Refractory for Boilers

A plastic refractory for boiler baffles, said to be impervious to the hot gases which are constantly passing thru the baffles, was recently developed by the Betson Plastic Fire Brick Co., Rome, N. Y., states the "Iron Trade Review."

In forming a cross baffle for a watertube boiler, the ordinary cast iron baffle plate is used as one side of the mold. The other side is made by thrusting slats in thru the diagonals between the tubes. The refractory is poked down thru the diagonals to fill the space between the cast-iron baffle plate and the slats. The refractory is said to be sufficiently plastic to be found sidewise around the tubes.

When this work has been completed the boiler is fired up slowly, the criss-cross of slats burned out, and the refractory vitrified in place. The operation requires only a few hours, after which the full load may be placed upon the boiler.

The position of the refractory is claimed to regulate itself automatically. Inasmuch as the boiler comes up to full steam capacity before the material is set, the latter is pushed away by the hot metal to the position which it should occupy when the boiler is hot. While the metal will draw away from the refractory in cooling, the baffles it is said will always fit tightly.

In forming a longitudinal baffle, blocks of wood are placed between the tubes, above and below the space which the baffle is designed to occupy, thus confining the plastic material which may be inserted by the most convenient method

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

Ben F. Ittner, formerly with the Belleville (Ill.) Brick & Tile Co., has gone to Hammond, Ind., where he is now doing government work.

William E. Dee, of Chicago, owner of the William E. Dee Clay Works at Newport, Ind., was in Newport last week to inspect his plant.

H. S. Hamilton, president, and L. W. Sprague, general manager of the McArthur (Ohio) Brick Co., were recent visitors in Columbus, calling on jobbers and manufacturers.

C. N. Adams, a brick manufacturer of Shreveport, La., is announced as a candidate for mayor, to fill the unexpired term made vacant by the death of Mayor Whittington.

Word has just reached us that E. B. Baker, of Fairmount, Ill., has answered his country's call and is now in training at the Great Lakes Naval Training Station.

Frederick A. Walker, Trenton, N. J., superintendent at the plant of the Crescent Pottery Co. for the past ten years, has resigned, due to ill health.

F. B. Te Loeken, assistant sales manager of the Cleveland (Ohio) Builders' Supply Co., was married the early part of May, and has returned from his wedding trip, spent in the East.

Allen S. Platt, son of C. B. Platt, secretary of the Permanent Buildings Society, Des Moines, Ia., has entered the ground school at Austin, Texas, for his preparatory work for the aviation department.

Maurice Greenough, chief engineer, and Will P. Blair, secretary, of the National Paving Brick Manufacturers' Association, have returned from the Ohio State Automobile Association convention, held at Lima, Ohio, the early part of the month.

Henry Clements, connected with the Cannelton (Ind.) Sewer Pipe Co., was in Evansville, Ind., recently on business. Mr. Clements is the fuel administrator for Perry County and he is advising people to lay in their coal this summer in order that there will be no shortage in his county during the coming winter.

Will P. Blair, secretary of the National Paving Brick Manufacturers' Association, Cleveland, Ohio, was one of he speakers at the National City Editors' Association onvention, held at Indianapolis, May 12. Mr. Blair's paper dealt with the relationship of highways to the city's welfare.

John Mayer, aged sixty-one, veteran brick manufacturer nd road contractor, died recently at his home at Decatur, nd., as a result of a paralytic stroke which he suffered a ew weeks ago. Mr. Mayer was in the brick manufacturing business in and near Decatur until a short time ago, when he disposed of his interests.

Stopping over in Norfolk on his way to Washington,

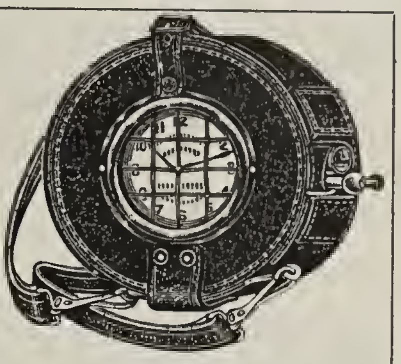
How long would a workman hold his job if what he did was so unsatisfactory that it had to be done all over again?

CRESCENT BELT FASTENERS

"stay put." One job; one cost! "A Little Selling Talk" tells why.

Crescent Belt Fastener Co.
381 Fourth Avenue, New York, N.Y.

Reduce the chances of
FIRE
PREVENT
Vandalism
By equipping your watchman and burners with a
HARDINGE Watch Clock
You will save in insurance more than the cost of the clock system—to say nothing of the increased efficiency of your night force.



Write for details
Hardinge Bros Co., Inc.
1760 Berteau Ave., Chicago, or
A. C. Rowe & Son, Inc.
33 Reade St., N. Y. City

Padded Gears
If You Use
Rino Gear Shield
the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,

The Ohio Filler and Shield Co.
Columbus - - - Ohio

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments

Hill Friction Clutch Pulley
Smith Type
(Patented)

Catalogs upon Request

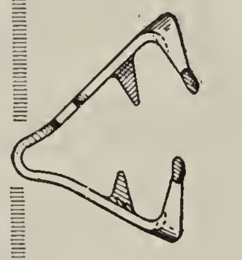
The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street

Who's Responsible
for that batch of work gone wrong? Put a
TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
Recording Pyrometer
on the job, and you won't have to ask that question. Instead you can say "Why did it happen?" You have the complete details before you in Bristol's Chart Records.
Write for bulletin AE-205
THE BRISTOL CO., Waterbury, Conn.

STEVENSON'S PANS AND SEWER PIPE PRESSES

are our leaders in a complete machinery line. Brick, tile and pipe plants furnished complete.
The Stevenson Company
Wellsville Ohio

Holds Square, and "never lets go".



Alligator Steel Belt Lacing
It is used by a great percentage of clay plants because of its flexibility and holding qualities.
Can be attached quickly and accurately —be sure and get ALLIGATOR.
Flexible Steel Lacing Company
522 South Clinton Street
Chicago, - - - Illinois

The A-B-C of Cost Saving
—
Anderson's Brick Conveyor System works when other yards are tied up for labor. The boys are "over there"
MARINETTE IRON WORKS
MARINETTE, WIS. C. J. ANDERSON, Prop.

D. C., A. R. D. Johnson, age 45, died in the station at Old Point, Pa., on April 30. Mr. Johnson was one of Raleigh, N. C., prominent business men, having been president of the Johnson & Johnson Co., the Cherokee Brick Co., and interested in several other large concerns. The funeral was held from his home in Raleigh.

California

It is reported that the California Brick Co., which operates a paving brick manufactory near Decota, Cal., has about exhausted its allowance of fuel and will close its works.

The Refractory Magnesite Co., at Preston, Cal., is running three shifts to keep up with the demand for its product. Much of this is shipped direct to the Stockton Fire Brick Co. for the manufacture of magnesite brick.

The Ione (Cal.) Fire Brick Co. is about to resume operations after its regular winter cessation of manufacturing. Unless prevented by the scarcity of labor it will doubtless turn out a large quantity of brick during the coming season.

It is understood that the Cannon-Phillips Co., manufacturers of the Dennison Patent Tiling, at Ben Alli, near Sacramento, Cal., has already consumed its allotment of fuel oil for the year and that in the immediate future the plant will be closed for the balance of the year.

The Richmond (Cal.) Press Brick Co. has secured the contract for furnishing 500,000 face brick for the new state agricultural building at the Fair Grounds, Sacramento. The contract for the architectural terra cotta went to N. Clark & Son for $15,520. Gladding, McBean & Co. secured the contract for terra cotta tile roofing on the same building for $12,100.

Articles of incorporation have been drawn for a state association of manufacturers with the object of "protecting and furthering the interests of the manufacturers of California, to develop relations and facilities for the interchange of ideas and for the promotion of industry." Manufacturers of all kinds are joining the organization and among its directors is G. D. Clark, of N. Clark & Son brick and tile manufacturers, San Francisco, Cal.

The brick men of San Francisco have done their ful duty in regard to the Third Liberty Loan just closed anc they are prepared to take a prominent part in the drive fo Red Cross funds which will be inaugurated in this city or May 18 by a mammoth parade. One of the enthusiasti workers in this good cause is C. F. Pratt, mentioned befor as the originator of the Shriners Sack of Flour plan fo aiding the Red Cross. This sack has already been auctioned off in several cities of the United States and Mr Pratt says that $18,000 has been realized on its sale an turned over to the Red Cross. At present the sack is i Oklahoma, where its sponsors say $50,000 will be raised It will be returned to San Francisco in time to be exhibite in the local parade and during the coming drive it i anticipated that at least $50,000 more will be added to th Red Cross funds thru its repeated sale. According to Mr Pratt, if the war lasts another year a million dollars wi eventually be paid to the Red Cross for the privilege o temporary ownership of this sack of flour.

The fire brick men of California have not been include in the ruling of the Fuel Administrator as their product i in too great demand in government work and the manufacturers of this class of brick say that they will continue to run full blast. The order as promulgated here b Albert E. Schwabacher, Federal Fuel Administrator fc

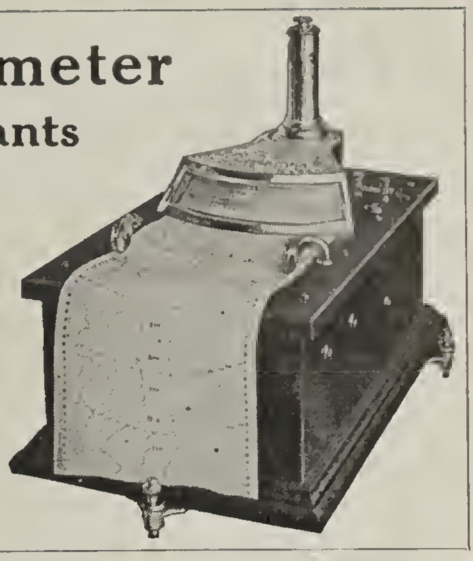
California, restricts the fuel consumption to the makers of face brick, common brick, paving brick, terra cotta, roofing tile, floor and wall tile, sanitary and enameled ware, hollow tile, drain and sewer pipe and stoneware. Every manufacturer of the above named materials must render an inventory of commodities manufactured, kind and quality of fuel consumed during 1917 and the quantity of fuel used during the previous two years, the amount of stock on hand December 31, 1917; and must render semi-annual reports thereafter stating amount of production, quantity and kind of fuel used, and stock on hand for the period of January 1, 1918, to June 30, 1918, and also from July 1, 1918, to December 31, 1918. The report for the first period is to be made not later than August 1, 1918, and for the second period not later than February 1, 1919.

In anticipation that the demand for brick might be increased this year and also for the purpose of taking advantage of the present prices of material and cost of labor, both of which it was realized might make decided advances at any time, most of the brickmakers of California early in the year started to run at full capacity and to pile up stock in their yards. As a consequence many of them have already exhausted a good percentage of the fuel allowed them by a recent order of the Fuel Administrator and have also made considerably more than half the allowance of brick assigned them under the recent ruling. This ruling, which permits the making of only half the average number of brick made during the past three years by each individual yard, has therefore caught the brick men napping. Many of them will doubtless be compelled to close by the time the year is half over and probably all, except the makers of fire brick who are not affected by the ruling, will be closed by August. Of course, after the brick are made they will have to be burned in the kilns and this will occupy a considerable more than half the force for some time after the machines are closed down. The manufacturers are allowed to make fifty per cent. of their normal output for the past three years for commercial trade. When brick is needed by the Government, a special permit allows them to make an excess of brick to fill such order. A nice technical point comes up on this question, which the local brick makers are discussing with considerable avidity. If the Government order is supplied from stock on hand will the manufacturer be allowed to replace that stock by fresh manufacturing? Off hand, it would seem as if they would be allowed to do so, but the local men are trying to get a decision on the point as early as possible, as they are planning to conserve their stock. They believe that it is the part of good business to take care of their regular trade, rather than try to dispose of their stock as soon as possible, so that they may not be compelled to build up an entirely new business after the war restrictions are removed.

Delaware

The Atlas Powder Co., of Wilmington, Del., is having a new town built near Perryville, Md., to house employes for a new explosive plant which is being constructed at that place. Because of the importance of the town, the government is to be petitioned to establish a post office there.

Because of the demand for houses at Carney's Point, N. J., the Du Pont Powder Co. of Wilmington, Del., is constructing 360 more homes for powder workers in the community village near its plant there. Of these houses about 300 are to be in bungalow style, to be leased at low rentals to the



Price Pyrometer on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

APPRAISAL OR INVENTORY—WHICH?

Would you desire an easy adjustment, in case of fire? Appraisal of your plant by a reliable firm makes it possible. Here's the proof in a letter from the Shackelford Brick Company, Laurence E. Stone, Treasurer and Manager—

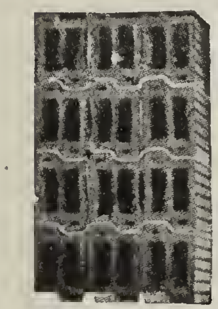
"You no doubt have been informed that our plant was destroyed by fire December 17, 1917, and we take this opportunity of expressing our appreciation of the appraisal rendered our company in November 1916, which proved very beneficial to us in the settlement of our fire insurance. We realize that we would not have been able to adjust this matter as readily or satisfactorily had we not been appraised."

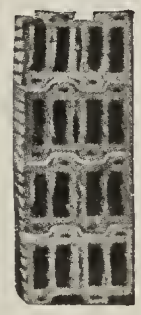
Send us description of your plant, kilns, etc., and approximate value of buildings. We will forward literature and inform you what our charges for appraisal will be.

RAU APPRAISAL COMPANY, Inc.

Patton Bldg.,
Milwaukee, Wis.

Monadnock Block
Chicago (Branch)

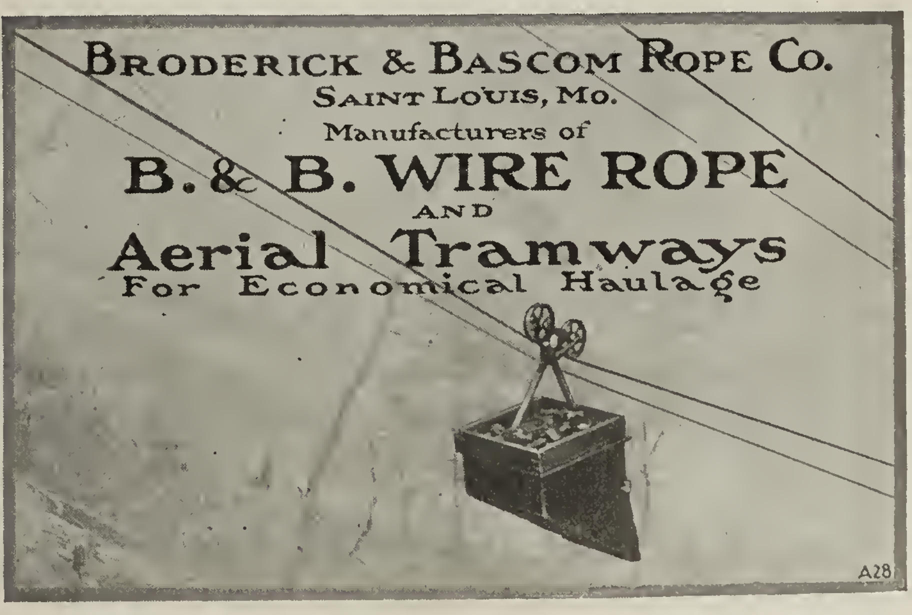




"LOXALL"
A Better Hollow Block

It is being licensed to manufacturers in each shipping district in the U.S.A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address

J. E. EXNER
602 Lincoln St. Coffeyville, Kas.



BRODERICK & BASCOM ROPE CO.
SAINT LOUIS, MO.
Manufacturers of
B. & B. WIRE ROPE
AND
Aerial Tramways
For Economical Haulage

They Drill Big Blast Holes

at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.

They say:

"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."

This is interesting because it is a fact.

Write for literature on Big Blast Hole Drilling

The Sanderson Cyclone Drill Co.
Orrville, Ohio

The "Rust Special" Clay Feeder

is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana

save that 25 cents and make it work for you and Uncle Sam It will buy W. S. S.

WAR SAVINGS STAMPS
Issued by the U.S. Government

At any Post office, bank or authorized business house

workers. About 60 are to be larger two-story houses and are to be constructed in the so-called permanent village at Carney's Point, which is across the Delaware river from Wilmington. The company has also arranged to have a new school house in the Carney's Point village, which will have ten rooms and will be used for primary grades. The new Lafayette school, a two-story brick building, is to be used for the instruction of children in the grammar grades.

Illinois

Plant Nos. 2 and 3 of the Western Brick Co., Danville, Ill., which were closed for some time and then operated on short time, are now working full blast manufacturing material to fill government contracts. It has been stated that the plants have orders on hand that will keep them running full time for several months.

Indiana

The Indianapolis (Ind.) Terra Cotta Co. has reduced its capital stock from $50,000 to $25,000.

The Hoosier Clay Products Co., of Hillsdale, Ind., has filed notice with the secretary of state that it has reduced its common capital stock from $150,000 to $60,000 and its preferred stock from $75,000 to $30,000.

George H. Thomas, trustee of Jefferson Township, Pike County, Ind., has advertised for bids for the erection of two new brick school houses in his township this summer. The buildings will cost about $20,000 each and work on them will start as soon as the contract has been let.

The Huntingburg (Ind.) Dry Pressed Brick Co. is improving its plant with a producer gas system, which will make it possible for the company to burn a kiln of brick in from four to five days, which is about one-half the time consumed in the old way. It is also said that the brick burned by the new system will be better in every way.

With the Third Liberty Loan campaign now a thing of the past, brick and clay product dealers in Indianapolis are directing their efforts in support of the $3,000,000 war chest fund which is to be created soon. Local dealers were extremely active during the Liberty Loan drive and the success of the campaign was no doubt due in a large measure to their untiring efforts.

The Vigo County Council at a meeting at Terre Haute, Ind., May 9, appropriated $35,000 for the construction of the National Highway from Seeleyville to the county line. To this sum the state will add $35,000. Work on the road, which will be made of brick, will be started at an early date and an effort will be made to complete it before the summer is over. The contract for the brick has not yet been awarded.

A new brickmaking plant has been bought by the trustees of the Indiana State Farm at Putnamville. The capacity of the new plant will be about 30,000 brick a day. The State Farm has heretofore made brick but the plant was not modern. The new plant cost approximately $3,500. The state farm has excellent material for brickmaking, the trustees say, and an effort will be made to supply the needs of all the state institutions.

The city of Evansville, Ind., started a campaign for the war chest fund on May 20, and it will continue until the first of June. H. C. Kleymeyer, general manager, and John Andres, secretary of the Standard Brick Manufacturing Co., Aaron M. Weil, president of the Crown Pottery Co., and Michael D. Helfrich, president of the National Pottery Co., are active in the campaign. It is expected that enough money will be raised by the various committees to carry on all the war work in Evansville for one year.

John C. Keller, traffic commissioner of the Chamber of Commerce at Evansville, Ind., has received a notice from the Public Service Commission of Indiana to the effect that a series of freight rate increases to railroads hauling between points in Indiana has been granted. The action of the commission was in response to the railroads' appeal for a fifteen per cent. increase in rates. The rates will go into effect within a short time. The increase on common brick was denied, since the commission held the rates on that commodity had advanced in 1911.

Iowa

The dismantling of the Shackleford brick plant at Des Moines, Iowa, has been started. The plant was damaged by fire several months ago and will not be rebuilt.

The regular monthly meeting of the Permanent Buildings Society was held at the Chamber of Commerce Club Rooms in Des Moines, Iowa, on May 9, twelve clay products manufacturing firms being represented. The subject of reaching the farmer thru effective advertising literature was discussed, and sample letters and folders were submitted. The reports of the members indicated a fairly satisfactory average condition of market with varying stocks on hand.

Maryland

The Maxwell fire-brick plant, located at Williams Station, Md., and owned by Gloninger and Gloninger, was burned on May 5. Everything was wiped out.

Massachusetts

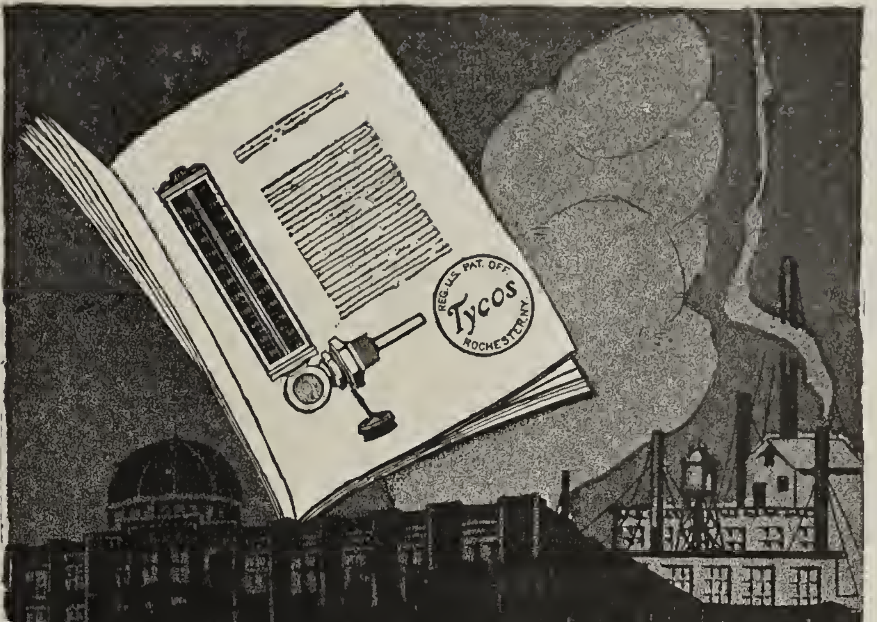
The government's order for a reduction of the output of brick manufacturing establishments has made the Massachusetts brick market very firm with delivered on the job prices holding at $14. Announcement that the government is in the market for 1,500,000 brick to be used in a big job at Schenectady also has had a favorable effect.

The Lockwood-Green Co., of Boston, Mass., has been given a million dollar contract for laying out streets, installing sewers and erecting 400 houses at Portsmouth, N. H., by the Atlantic Corporation, which is building ships for the government. The new town, for it will be located in what is now an unsettled part of the city, will be inhabited by several thousand shipyard workers as soon as the work is completed. Walter E. Ronan, of Woonsocket, R. I., will supervise the work for the contractor.

The recently elected officers and directors of the Massachusetts Brick Manufacturers' Association are preparing for an active year. The officers, all of whom were re-elected are: President, George A. Parry, Parry Brick Co., Boston; vice-president, R. A. Bailey, Springfield Brick Co.; secretary and treasurer, Sidney H. Francis, Fitch-Brick Co. The board of directors is made up of the officers and the following members: C. S. Hart, Stiles & Hart, Taunton; C. L. Sauter, Northampton; C. C. Dyer, Greenfield; and W. N. Carey, Carey Brick Co., Newton Hook, N. Y.

Missouri

The government has not closed the contract for the delivery of brick for the two large buildings at the arsenal



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There's a Tycos Thermometer for Every Purpose

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we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

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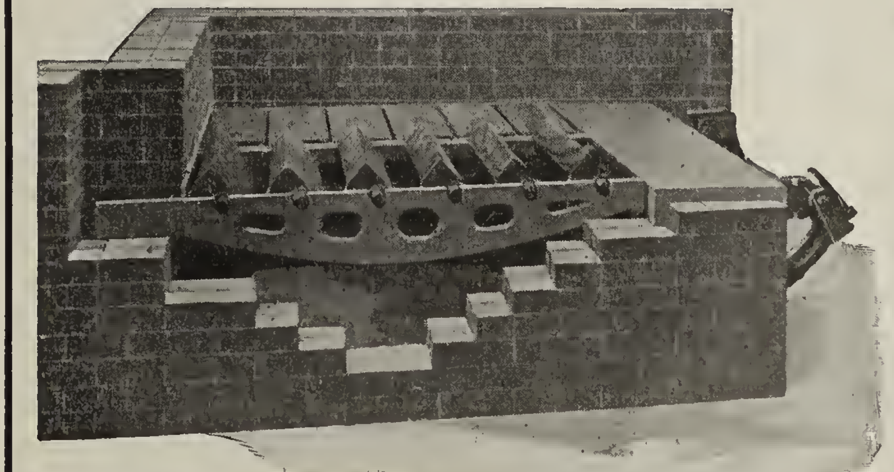

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It is a war-time economy. Not only the most successful brick drier, but likewise the simplest and easiest to operate. Labor and fuel cost lowest of any. The high grade of material used throughout makes upkeep cost the lowest, too. Ask any user. Write us for catalog.

The Standard Dry Kiln Company
1540 McCarty Street,
Indianapolis, Indiana

A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
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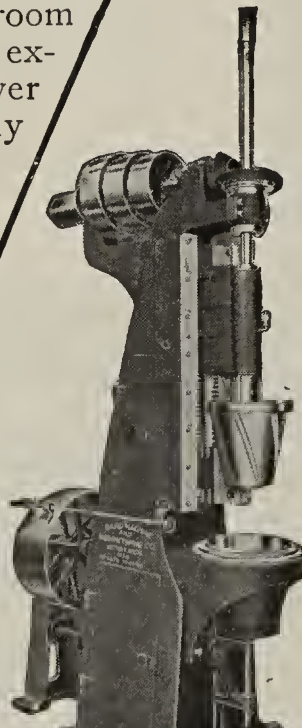


in St. Louis, Mo., which are in contemplation, but it is announced it will do so at an early date. The work on the first building unit is nearing completion. It is a reinforced concrete structure with brick curtain.

A bill authorizing the city to permit the Highlands Fire Clay Co., St. Louis, Mo., to mine fire clay under a portion of Forest Park, was reported favorably by the public welfare committee of the board of aldermen. A. C. Stuever, president of the company, agreed to pay the city twenty cents a ton for the fire clay removed.

The A. P. Green Fire Brick Co., of Mexico, Mo., has opened an Iowa district office in the Hubbell Building, Des Moines, Iowa. Mr. Edward Emmert, who has been in the brick business for a good many years, having spent most of his time in Iowa and adjoining states, is in charge. The opening of this office is in line with the policy of the Green company to give the best service possible to fire brick users.

Considerable agitation has been going on by civic and business interests of St. Louis, Mo., to induce the government to establish at this point a large steel arms manufacturing plant which is in contemplation. The erection of this structure would call for the use of from six to seven million brick, it is stated. Owing to the location of St. Louis and its shipping facilities which would give the government an unusual opportunity to ship in all directions, it is confidentially believed by industrial men here that this city will be looked upon with great favor.

Notwithstanding the fact that there still exists in St. Louis, Mo., shortage of labor in the brick and clay industry, and other conditions have served to discourage the business to a greater or less extent, most plants are running under fairly good time and the output is very satisfactory. The use of clay products last year in the building of the large army cantonments caused a decidedly heavy call upon the St. Louis makers. Recent talk of enlarging many of these camps and the building of others has caused manufacturers to contemplate further heavy orders, and if these orders come they will not find St. Louis unprepared to fill them.

New Jersey

Following the failure of the Cliffwood (N. J.) Brick Co. the dismantling of the plant has been commenced.

The New Jersey Brick Co. and the National Fire Proofing Co. have about the only large clay plants left in operation in Monmouth, N. J.

The Packer Tile Co., Newark, N. J., has taken out a building permit for alterations and improvements in its plant.

The labor shortage in Monmouth County, N. J., continues. Some men not in munitions plants have taken up farming, the cultivating season being well underway in those parts.

B. H. Lage, Inc., Menlo Park, N. J., manufacturers of tile, has been placed in the One Hundred Per Cent. class, every employe having purchased a Liberty Bond of the third issue.

Considerable terra cotta will be required in the new church to be erected by the Holy Rosary Roman Catholic Church in Eighth Street, Passaic, N. J., at a cost of approximately $100,000.

The Monmouth Manufacturers' Association has elected officers for the ensuing fiscal year. John H. Fritzinger, of Perth Amboy, N. J., heads the concern as president for the third consecutive time. J. Kahler and E. L. Lisk succeed George J. Craigen and B. K. Eskesen as vice-presidents. F.

A. Cater succeeds Cleveland Watrous as secretary, and C. Parker succeeds W. A. Gill as treasurer. Reports rendered at the annual meeting show the association to be in excellent standing and to be growing, despite a slackness in the building line.

Building permits issued in Paterson, N. J. in April were the smallest in number and value that they have been for ten years. Architects say they have no inquiries. Builders say no one offers them contracts. The situation offers no promise of improvement this season.

Paterson, N. J., is a gloomy place for builders. This is not because the necessity does not exist, but because it is quite impossible to do businesss. Building material can not be obtained in sufficient quantities to allow active trade, and what is more, all the men formerly engaged in building are now at work in the Newark shipyards. It is next to impossible to get anyone to make repairs, to say nothing of erecting either houses or kilns. At least 500 houses are needed at once. The committee appointed by the Chamber of Commerce hoped to secure government sanction for the erection of some houses, but thus far they have not done so and have about given up the attempt for this year.

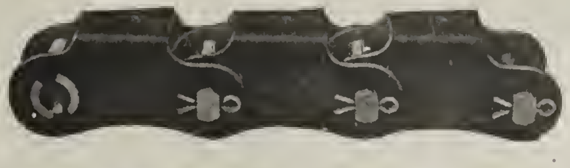
Since the opening of May, fires have been burning in some of the plants along the Hackensack river, in New Jersey, rather spasmodically. The Mehrhoffs started their fires at Little Ferry, but after a few days they were permitted to go out. E. & I. Gardner started their fires twice, but as this is written they are out. Edward Schmultz began business twice, but at present the plant is not operating. The Hackensack Brick Co. is the only one to keep fires burning. They have not yet, however, begun operating at capacity. One or two other plants are reported to be laying up small arches, but in the main, business along the Hackensack is less active than it has been for many seasons.

Construction work in Newark and vicinity has not showed any marked increase during the past two weeks, altho a number of contracts have been placed for industrial works. The comparative activity in small building operations continues; this phase of construction is of the highest importance, and, with exception of government building projects, is practically all that is being done to any extent. New government building projects continue to be announced to the trade with remarkable regularity, and the end of these large operations is not yet in sight. The W. & A. Fletcher Co., Hoboken, N. J., has placed a contract for the construction of a new three-story brick plant to cost about $40,000; a new power plant will be erected by the Central Railroad of New Jersey, Jersey City, at a cost of $50,500; and the Federal Shipbuilding Co., Kearny, has acquired additional property comprising 21 acres at the foot of Yale Street, Jersey City, for extensions to its present works. New structures are now being erected at the site consisting of a machine shop costing $225,000, forge shop to cost $100,000, foundry building to cost $75,000, and other structures.

New York

Permits for new buildings in Utica, N. Y., in April were for structures to cost $138,250, which is only slightly below the figures for April a year ago.

Building permits in the city of Auburn, N. Y., for the month of April this year showed an increase of about 110 per cent over April last year. Many large industrial plants building extensions was responsible for the more than



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insure Trouble-Proof Chain Service and a noticeable saving in operation—in final cost. Progressive clay plants use them. Write

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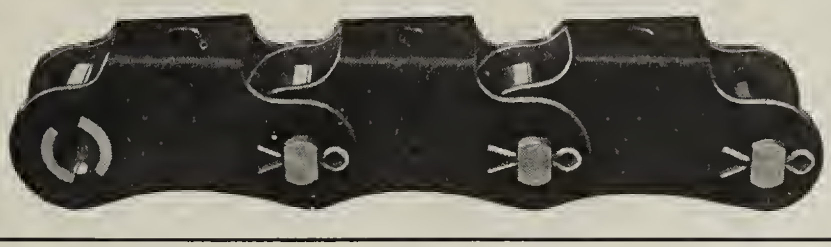

A Patriotic Necessity That Is Profitable To You

When you install Beighlee's Pyrometer, you are serving the nation by conserving the coal or fuel supply. In addition you profit yourself by virtue of the smaller amount of fuel needed, and by virtue of the greater quantity of better ware produced. Beighlee Pyrometers do not get out of order easily, they are sturdy yet very accurate—and they always save for their owners.

The Beighlee Electric Co., Cleveland, O.

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**Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
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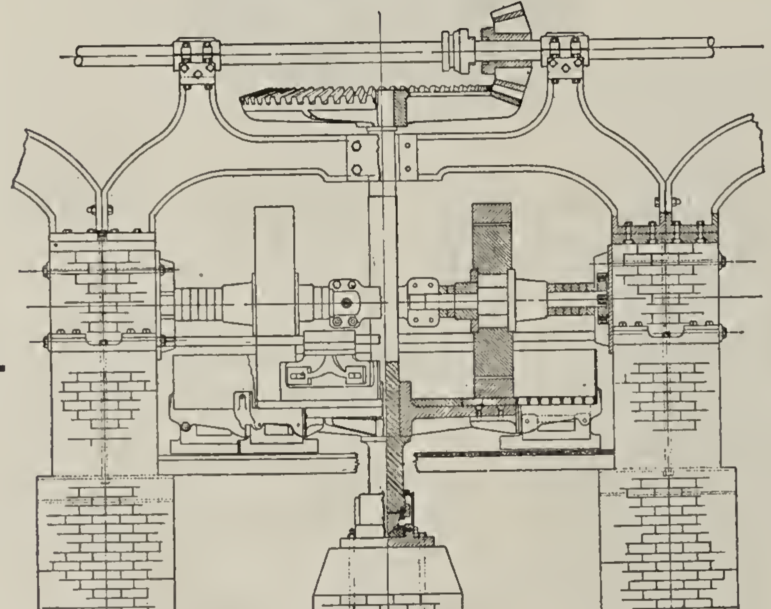
STEAM SHOVELS

The "Means" Nine Foot Pan

The skill and judgment accumulated by many years of successful manufacturing show up in these pans to great advantage.

Before you buy, ask us for proof of what our machines are doing in the great Ohio valley.

Toronto Foundry & MachineCo., Inc.
Toronto, Ohio



doubling of the month's building record compared with the same time a year ago.

Increases of about twenty-five per cent. were shown in the building record for Syracuse, N. Y., during the month of April over the corresponding month of last year. For the first week in May the record shows a still further advance over the first week in May, 1917.

The Ogdensburg (N. Y.) Brick & Sand Co., Inc., has been chartered to manufacture brick, tile, roofing and other clay products. The capital stock is $15,000 and the directors are Eustace J. Earl, Robert H. McEween, Jr. and Reuben W. Dobiskey, all of Ogdensburg.

Altho the market for Hudson River common brick is comparatively quiet for this season of the year, there has been quite an improvement in the past two weeks. In view of the general conditions governing building construction, the sales for the period are considered as being satisfactory. It is said that brick manufacturers are now making active preparations for regulating the production at their plants, which is due to the fact that a definite basis for production has been established by the Fuel Administration.

May Day brought a flood of labor disputes in Syracuse, N. Y. In some cases demands for wage increases were promptly met by employers, but in others increases were refused and strikes resulted. The bricklayers and masons, altho their contract with the contractors had not yet expired, demanded an increase of five cents an hour under threat of a strike. International officials of the union came to Syracuse and after several closed conferences the matter was adjusted by the increase being granted. Sheet metal workers were refused their increase and went on a strike. Later the employers gave in.

Building work in Binghamton, N. Y., is being greatly hampered this spring by a dispute between the building trade unions and the employers over the open shop. The men are demanding that the employers pledge themselves to employ none but union men. This demand has been flatly refused. Charges and counter charges by and against both sides are being published in the newspapers in which every faction concerned announces its determination to stick to its position. Union leaders declare if they cannot win their point any other way a general strike of all the building trades will be called.

Central New York builders are not at all worried or concerned over dispatches from Washington to the effect that industrial construction work in the Eastern states is to be placed under an embargo in an effort to force some of the larger industrial concerns to build in the West and Middle West and eliminate overcrowding in the eastern "war belt." A large percentage of all the building that has been done in this section for the past year has been of the industrial type and practically every factory that was planning a new plant or extensions or repairs has either completed this work or has started it. There will be only a very small number of plants affected, the builders say, if the contemplated embargo is actually put into effect.

Men employed in the building trades at Binghamton, N. Y., have asked for general wage increases. These include the bricklayers, masons, plasterers, carpenters, electrical workers, plumbers, steamfitters, painters, decorators and paperhangers. All the unions named delegates to attend a joint building trades meeting, and the matter was discussed behind closed doors, with nothing given to the public. At the conclusion of the meeting a resolution was drawn up and presented to the contractors, asking that after May 1 all men engaged by the contractors be required to show their union cards. It also expressed the hope that the wage question could be settled without trouble and without loss of time by the workmen. The general impression is that the affair will be adjusted without a strike.

Determined opposition has developed among building supply dealers in New York state, real estate men and contractors against the Gibbs bill, which has passed both houses of the state legislature and is now before the Governor awaiting his decision. The Governor is being urged by these men, banks and loan associations, not to approve the measure on the grounds that it will restrict building. The building supply men feel that the passage of the bill, which would make any builder or contractor pay for his materials before he secured a loan, would put many small concerns out of business. It is also believed that it would seriously affect the building of small homes in that men with a small amount of money would be stopped before they even started. The measure as drawn and passed affects every city and town in the state with the exception of New York City. Opposition is general all along the line.

Ohio

The Ironclay Brick Co., of Columbus, Ohio, contracted to deliver approximately 40,000 face brick from the Hanover plant for the construction of the Union township school, located at Union, Licking County.

Leroy Gaddis of the Gaddis-Harrison Co., Columbus, Ohio, jobbers of clay products, reports a better car supply and that shipments on face brick especially are coming out better. Mr. Gaddis reports an improved demand for brick, mostly for the construction of dwellings and apartments.

There is strong talk of another large down-town hotel to be erected in Cincinnati. A number of eastern men were in the city recently looking at locations and will return soon to take further action. This is said to be the result of the decision of the government to erect the large nitrate plant at Elizabethtown, Ohio, near this city.

The Trailmobile Co. will build a new plant, to cost more than $300,000, on the east end of the old Oakley race track, Cincinnati, Ohio. An eight-acre tract has been purchased and plans for the structures are being prepared. The government permit has already been secured for the brick and steel, of which the plant will be built.

The Hallwood Brick & Tile Co., of Columbus, Ohio, has improved its quality of common brick to a large degree and is making quite a large quantity of the new brick. Common brick in Columbus is now selling at from $13 to $14 delivered on the job. There is a good demand for common brick both for factory building and for backing up in dwellings and apartments.

The West Virginia Rail & River Coal Co., of Columbus, Ohio, has purchased the coal properties, brick plant and salt wells on the property it has been operating under lease from Henry S. Hallwood, of Columbus. The property consists of 3,000 acres, located on the Ohio River with Hallwood, W. Va., as the loading point. The brick plant is now in operation and has a large production.

It has been given out by the government that in the building of the new nitrate plant at Elizabethtown, Ohio, there will be as much brick used as possible. This will be done in order to keep the brick men employed, so that the carpenters can be used on ship building. This will be a help in the right direction and if the idea is followed out in other

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand, Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity, Durability and Satisfaction

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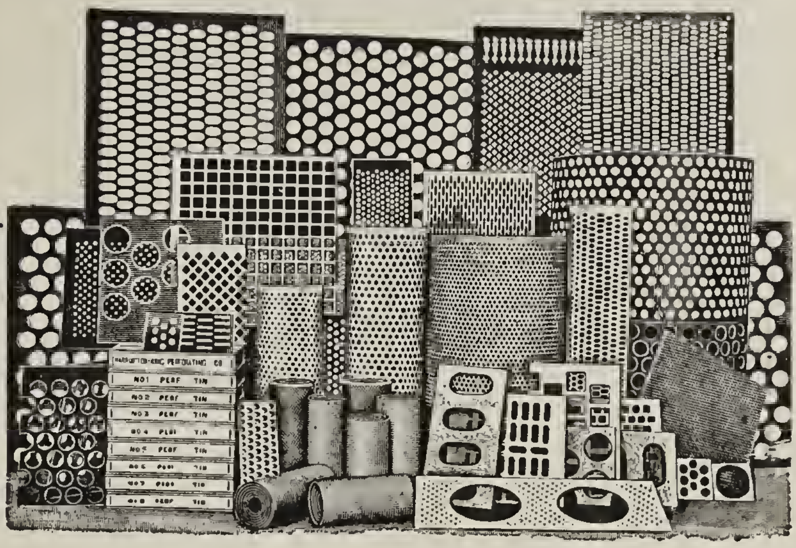

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You can safely guarantee that your brick will be

Scum-Proof

You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

But insist on the R. H. BRAND—it's dependable.

We have a complete line of high grade chemicals for the clay industry

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It Eliminates Scum

This is the one big reason that you should use it in your clay mix. If there is any one way in which your ware can be improved, you should immediately adopt the method, for Brick must hold up its good reputation. Rollin's Barium Carbonate provides the way. Many plants use it.

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Shaking and Dumping
GRATES

Not a TRIAL Nor An EXPERIMENT

When it comes to saving fuel, keeping the fires clean, removing clinkers and ashes easily, these grates have proved their practical utility for many years.

The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

When you want Grates—don't forget to investigate the merits of the Canton Boiler Grate. Write for catalog.

THE CANTON GRATE CO.
1706 Woodland Ave., CANTON, OHIO

Southern Representative: McBurney & Jones,
Efficency Engineers, 829 Trust Co. of Ga.
Bldg., Atlanta, Ga.

cities and on other projects, will be a boost for the brick and clay industry.

The advance of 15 per cent. on freight rates on all clay products, which has taken effect on many lines and will be effective generally shortly after May 1, is another burden put on the clay products industry of Ohio. It will be an advance of from $1.25 to $1.50 in the price of most products, and possibly more. Thus a shipment of face brick from the Hocking Valley to Columbus which was formerly $1.35 per thousand is now approximately $2.68. In some instances the advance in rates amounts to an 18 per cent. increase.

Opposition of the Federal Government to construction of public school buildings during the period of the war resulted in the Board of Education of Cincinnati, Ohio pledging itself against such construction. A resolution presented to the board by Malcolm McAvoy delays building operations on the new Hoffman School. Under the Ohio Statutes no contract can be entered into by the board unless moneys for the completion of the work are available. The lowest bid received makes a total cost of $388,511 for the Hoffman School. A sum of approximately $320,000 with which to meet this outlay is on hand in the building fund.

In the war industries board of the Columbus (Ohio) Chamber of Commerce, just organized, Uncle Sam will find a united body of men representing Columbus industrial activities, backed by facts and figures, that will enable him to secure almost at a moment's notice intelligent co-operation and information relative to the possible production of any article that can be made in this territory. It is expected that the organization will include all manufacturers whose plants are located in Columbus and adjacent territory. W. R. Jones of W. R. Jones & Co., glass manufacturers, was elected president of the board. W. H. Hoagland is vice-president, Harry H. Price, treasurer and A. R. Leonard, secretary.

Good roads enthusiasts in Ohio are making a strenuous effort to have the road improvement program arranged some time ago carried out despite the unusual war conditions. A committee representing the Ohio Good Roads Federation, the Ohio Highway Commission, the Ohio Macadam Association and the Public Utilities Commission left for Washington recently to take up the question of securing transportation facilities for road materials with the federal officials. The big problem, it is admitted, is that of transportation and it is pointed out that all of the necessary funds for road work have been provided for by state, federal and county legislation. Paving brick manufacturers are aiding in securing favorable action on the part of the federal officials.

Actual work to get more housing for Cleveland, Ohio, has been started by the Cleveland City War Board and the housing committee of the Cleveland Chamber of Commerce. These bodies plan to ask the United States Government to set aside $1,000,000 with which it is hoped to build 10,000 houses, to be rented at the lowest possible rent to factory workers. The request will be made when definite information on the situation is obtained. This information will be obtained thru a survey, for which $5,000 has been voted by the war board. According to Miss Charlotte Rumbold, assistant secretary of the Cleveland Chamber of Commerce, the survey will show that even more than 10,000 houses are needed in Cleveland at this time.

Building activity in Cincinnati is not brisk, and still the indications are very promising, considering the present unsettled state of affairs in the material industry. There are

several projects in view that will be of more than passing magnitude. These include a thirty-five story office building to be erected by the government to house the various railroad offices, and some other departments of the government. The site for this structure has been selected, and plans are under way so that there is no doubt about the realization of the idea. The location is a secret as yet, but the outlines are said to prove that the structure will be the most pretentious of its kind west of New York City. It will be modern in all respects and include some clever ideas in structural work. Just when work will be started on this building cannot be said at this time.

Orders for brick made at the Ohio prison plant near Junction City are coming in so fast that H. S. Riddle, of the board of administration, who has charge of the sales, has been compelled to refuse a number of orders. Orders are coming thru the state highway commission and are for road work. Private brick manufacturers have been able to dispose of all the brick they can make with their facilities limited on account of the war, and this has turned many orders to the state plant. Eighty-two prisoners are now employed at Junction City, and orders on hand call for about 2,000,000 brick to be delivered during the next 60 days. Some of these are being used for highway and others for building purposes. Ohio State University alone is using almost a half million for new buildings. It is proposed to increase the capacity of the plant.

Extensive reduction in shipments by rail, in order to relieve freight congestion, has been inaugurated by one Cleveland (Ohio) brick concern. The Cleveland Material Co. is now using trucks more extensively, and in addition has altered its routings, so that there is much less congestion of cars with materials. This is one of the first firms in Cleveland brick and clay trade to heed the request of the National Council of Defense to aid the railroad situation. According to C. H. McAlister, of the Cleveland Material Co., the traffic department of the firm has been greatly strengthened and efforts directed to lessen the railroad mileage per ton on shipments. Routing is being studied to avoid terminals or transfer points as much as possible. Much of this is due, says Mr. McAlister, to increasing the trucking service, so that during the last three months the shipments by railroad have been reduced from 30 to 50 per cent. without reducing service in deliveries.

Pennsylvania

The Corry (Pa.) Brick & Tile Co. turned in a one hundred per cent. subscription for the Third Liberty Loan, every employe of the plant as well as the entire office force having subscribed for bonds.

The Keystone Clay Products Co., South Greensburg, Pa., recently converted two of its eight gas burning kilns into coal burners. This totals four of the latter, as two more were also built new three years ago. The reason for making the change is because of the shortage of natural gas last winter, when the plant was forced to close down from December until May 1. The Keystone company produces a red shale face brick. C. C. Hayes is superintendent of the plant.

The Canton Tile Hollow Brick Co., New Bethlehem, Pa., has changed its name to the New Bethlehem Hollow Tile Co. Ira E. Lower and Charles M. Lower, the owners, have cancelled their Ohio charter and corporate name and will continue operations as a partnership. The company manufactures all kinds of hollow building block and drain

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Put Your Plant on a War Basis

Conserve - Fuel
Save - - Labor
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When Clay Brick are Hard to Make—
When Orders are Good—

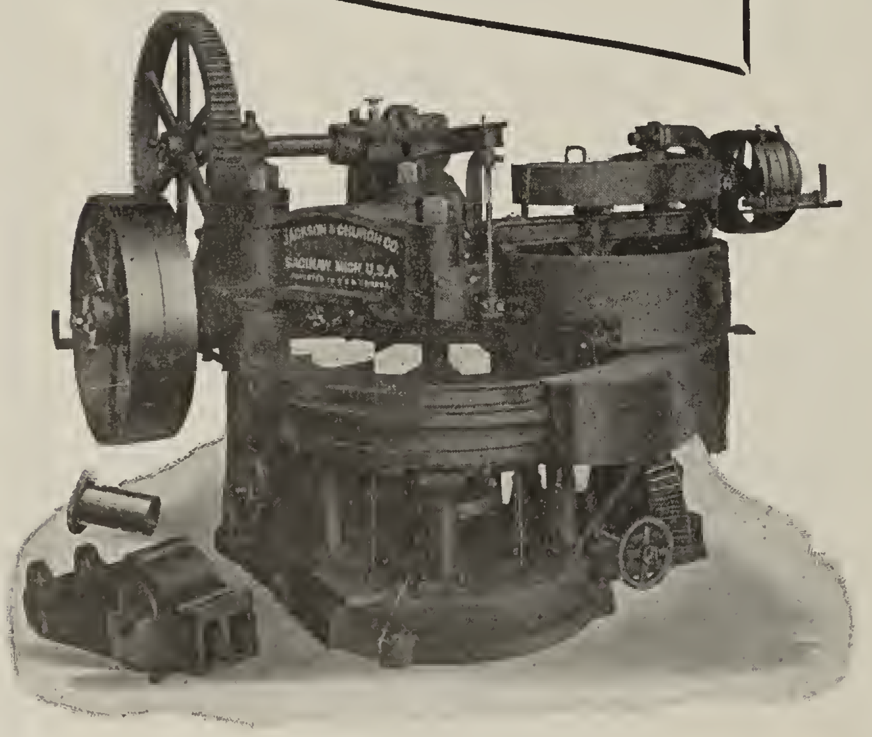
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

SAY I SAW IT IN BRICK AND CLAY RECORD

tile and uses gas in burning its products. Business is reported to be good and the labor situation is good but cars are difficult to obtain.

Washington

The Dishman plant of the Washington Brick, Lime & Sewer Pipe Co., which was destroyed by fire last fall, has been rebuilt and has resumed operations.

The Northwest Magnesite Co., of Spokane, Wash., is making great improvements in its plant. The company is spending $150,000 on these improvements and its capacity for calsining will be doubled according to the estimation of the management.

Wisconsin

The Vesper (Wis.) Brick & Tile Co. will close its plant down for some time, because of the scarcity of men and the difficulty experienced in securing coal, altho the company reports an enormous demand for drain tile.

Canada

The Price-Cummings Co., Ltd., Toronto, Ont., intend manufacturing sand-lime brick.

James Lochrie, a brick manufacturer of Toronto, Ont., had a small loss by fire recently.

At the annual meeting of the share holders of the National Brick Co., of Laprairie, Ltd., Montreal, a statement covering the operations of the fiscal year ending February 28, was submitted. Operating profits were $22,957 after the writing-off had been done. The year previous the earnings were $22,714. A. A. Ayer is president.

Following is a comparative statement of building permits issued in Toronto, Ont., from January 1 to March 31, 1917 and 1918:

	1917	1918
Approximate value of buildings, January 1 to March 31	$1,383,105	$1,286,911
Approximate value of buildings for the month of March	414,708	529,664
Number of building permits issued January 1 to March 31	578	431
Number of erections for which permits were issued for the month of March	338	254
Number of new erections from January 1 to March 31	709	534

* * *

Increase in Canadian Clay Production

The total value of the non-metallic production in Canada in 1917 as shown by a preliminary report issued by the Department of Mines, including clay and quarry products, was $86,352,085 as compared with $70,882,169 in 1916, showing an average increase of $15,469,916, or 26 per cent. Practically every product, with the exception of the stone-quarry output, shows an increased production, but in the case of coal, graphite and cement, the quantities actually marketed were less, notwithstanding the increased value.

The increase in clay products for 1917 over 1916 amounted to $482,950 or 11.7 per cent.

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

Potteries Sold Out on Teacups

Labor difficulties brought on by the war and other conditions relating to the manufacture of pottery have affected the supply of certain types of teacups, so as to make them very scarce thruout many Central New York towns and cities.

Restaurant keepers who have recently made attempts to replenish their supply have been surprised to find the supply in the stores exhausted or very low, while the store managers have told them that there is little prospect of their being able to replace their stock at any definite time.

The potteries in this section have been particularly hard hit by the labor stringency and the coal shortage. The draft too, has made deep inroads on the employes in the potteries, as many kinds of labor employed in these factories can be utilized to good advantage in making munitions. Higher wages are paid in these war plants, with the result that some of the workers have been leaving. The potteries are, therefore, forced to pay more wages, and as a result the pottery men are unable longer to turn out the cheaper grade of teacups at the prices they can command for this kind of ware.

Furthermore, the war has also shut off the importation of a certain kind of clay from England that American manufacturers have been using in the manufacture of the cheaper kind of teacups. Many of them are experimenting with domestic clay.

A great many of the china dishes on the shelves of local stores have been imported from England, and one department store manager declared that shipments from England are being received more promptly than orders placed with domestic concerns.

Sales recently have been very heavy on decorated goods, and as a result practically no white goods are being sold for the reason that the white goods are being used up by the decorators.

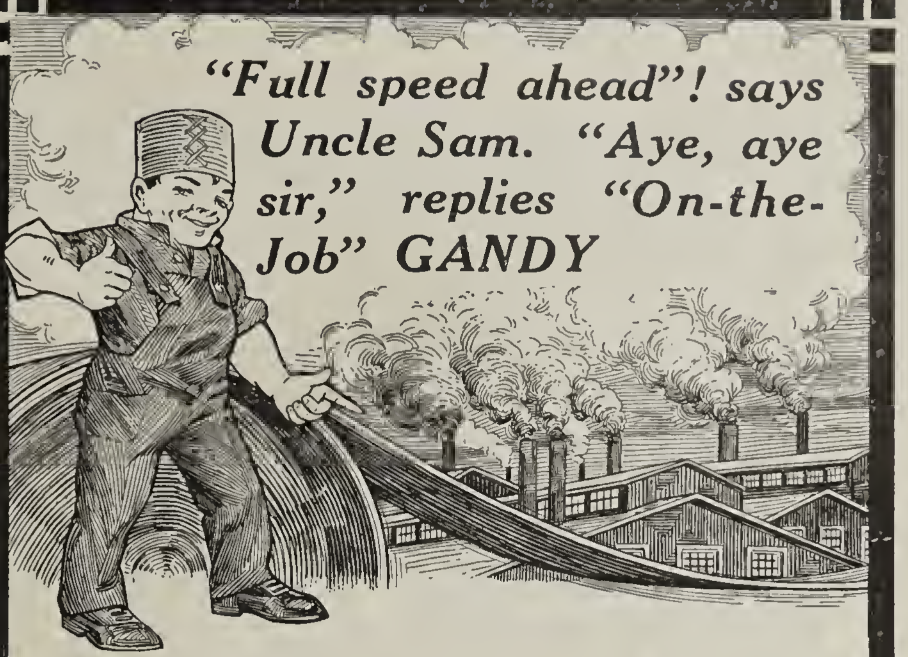
A tour of local stores disclosed the fact that the supply of cheap white cups is at a very low mark, and some stores have none at all. Several of the managers declared they could not even predict when they would have more. Some of the five and ten cent stores have a few on hand. One store had a large supply of damaged goods with chips. These are being sold separately, cups to one customer and saucers to another.

* * *

Potter's Clay in Ouachita

Professor E. C. Steel of Aubrey College, who is making a geological survey of the valley of the Ouachita river in the expectation of finding valuable mineral deposits, gives it as his opinion that Ouachita County, (Arkansas) is remarkably supplied with potter's clays.

No industry for manufacturing clay products is now in existence in the county, though there was a well equipped pottery in Camden before and during the Civil war, and there have been several efforts to organize manufacturing concerns at that place in recent years.


"Full speed ahead"! says Uncle Sam. "Aye, aye sir," replies "On-the-Job" GANDY

"They have chosen the sword, by the sword shall they perish."

Thus has America sounded the doom of autocracy.

It must not fall to the boys in blue and khaki to do autocracy to the death unaided.

You are called to get behind our armed forces with the necessary material and supplies.

"On-the-Job" *Gandy* comes to your assistance with a transmission belt that gets

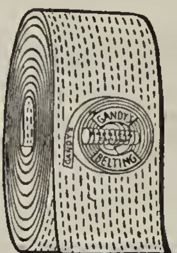
All the Pull From the Pulley

For maximum service and maximum economy the *Gandy* stitched cotton duck belt is without a peer.

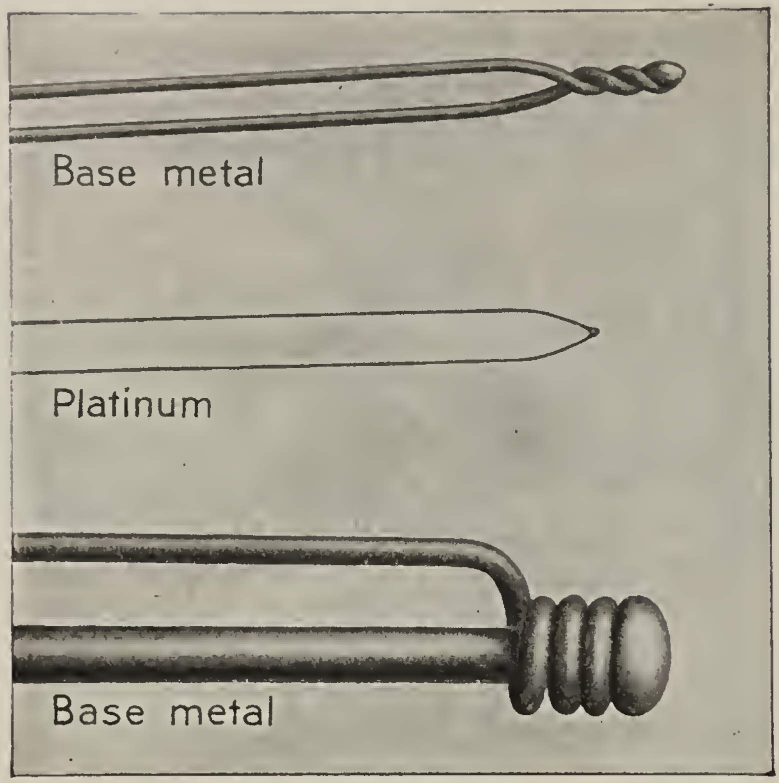
Order today from your Mill Supply House, or home plant direct.

We are prepared to give you quick delivery of seasoned Belting.

Look for the painted green edge and *Gandy* trademark.



THE GANDY BELTING CO.
732 West Pratt Street
BALTIMORE MD.
New York Branch: 36 Warren Street



Why Base-Metal Are More Desirable Than Platinum Thermocouples for Measuring Temperatures below 800°C. (3000°F).

Thwing pyrometers are furnished with either platinum or base metal thermocouples, but for the temperatures mentioned above, our experience in all lines of industry proves that base metal *even with much more frequent renewal* is preferable to platinum.

The full size comparison above of typical couples for the same duty indicates the greater ruggedness of even a medium weight base metal couple. Not only is platinum very much more expensive in first cost, but its contamination and crystallization are gradual with constant failing of accuracy, where with a base metal couple the accuracy remains practically constant without frequent recalibration.

From the standpoint of service, the base-metal couple being so much more rugged is less apt to suffer mechanical injury, yet may be renewed *six* to *eight* times without equalling the cost of platinum. Moreover, platinum is often stolen because of its high value.

Owing to its higher electromotive force, base metal permits a more open scale on the indicator for the lower temperatures and therefore the reading is apt to be more accurate.

If you have been under the impression that your high expense for platinum couples is a necessity, let us submit data or send you a base-metal couple for test. The result will be convincing and show you how to make big savings.

21

THWING INSTRUMENT CO.
3336 Lancaster Ave. Philadelphia, Pa.

Among the Potteries

A small strike occurred at the Onondaga Pottery plant at Syracuse, N. Y., where less than fifty men in the gloss kiln and biscuit kiln departments quit work as the result of what they said was low wages and the uncertainty of work. The men said they have often reported for work in the morning and have been forced to return, as there was nothing for them to do. The matter will probably be adjusted shortly. Edward L. Torbert, general manager of the company, declares the walkout was not of sufficient importance to be called a strike. "The company is not ready to enter into a controversy involving 36 men or so out of 840 employes," he said. "As a matter of fact, in regard to the full time argument, we have never been so rushed with work as we are at present."

Government contracts for more than a million dollars' worth of china for the army training camps have put local pottery concerns on easy street as far as the coal situation is concerned. As they are now working on government orders, the federal officials are seeing to it that they get a sufficient coal supply and all are getting their coal regularly. One pottery plant had between fifty and one hundred cars of coal on the road on different lines one day recently. This coal is arriving, two and three cars per day, and is being unloaded as rapidly as possible. A great portion of it is being stored up as a reserve for use this winter when another coal famine is threatened.

The various potteries at Evansville, Ind., have been running steadily for the past several weeks and trade is reported satisfactory. Freight embargoes and the car shortage have handicapped the manufacturers, however, to some extent. The labor shortage problem as yet has given the pottery manufacturers little worry.

The Cheshire Pottery Co. has been incorporated under the Massachusetts laws by George M. Morton as president, Lewis M. Alexander as treasurer and P. Alexander, director, all of Boston. The company is capitalized at $10,000.

Maddock & Miller, 52 Murray Street, New York, manufacturers of pottery, have filed notice of an increase in capital from $30,000 to $300,000 to provide for business extensions.

The Sebring (Ohio) Pottery Co. has increased its capital from $10,000 to $112,500.

* * *

Flag Campaign Started for Cleveland

By this time next month every home in Lakewood, Ohio, a suburb adjacent to Cleveland on the West, will have an American flag hanging in the winodw. Such is the prediction of "Bob" Mitchell of the S. A. F. E. and allied organizations, which hold forth in the Leader-News Building, Sixth City.

A slogan has already been adopted for the campaign. It is: "A Flag In Every Home In Cleveland," for the Lakewood movement is but the perliminary skirmish to round up all the real patriots in the Greater Cleveland district.

The whole plan is being financed and carried out personally by Mr. Mitchell. He has contracted with the Cleveland-Akron Bag Co. for flags, 22 inches long, one kind of silk, which will cost 55 cents, the other cotton, which will cost 15 cents. These prices are just a bit above actual cost, and a slight profit is necessary, as those people or families who cannot afford to buy a flag will be given one free, and there ought to be something over the original cost to take care of the free flags. Thus when all flags have been distributed, it is expected that not a nickel will be left for profit. However, if there should be some profit, this will be turned over to the Red Cross in Cleveland.

And now here is the secret of the campaign. Everyone knows there are a lot of pro-Germans around everywhere, and the Cleveland section is no exception. It is Mitchell's idea that it is about time this bunch was rounded up, so that everyone may be on the right side of the fence. It is his opinion that everyone who refuses to buy or accept a flag free, or who refuses to put it in the window, may be classified with the brood that comes out of the murder-factory some 4,000 miles hence. These Mitchell proposes to turn over to the American Protective League. Thus it is believed the scheme will expose traitors, and possibly spies.

With Dr. A. E. McClure, "Bob" will canvass two streets in Lakewood as an initial experiment. After this tryout agents will be sent all over Lakewood. When Lakewood has been taken care of and the value of the scheme proved, Mitchell will present the plan to the American Protective League for its adoption in the entire Cleveland district. If it works well here, it is his aim to urge the plan upon the entire nation.

The extent of the proposition here can best be realized when it is said that Cleveland has a population of close to 1,000,000 and Lakewood itself a population of more than 40,000. It will require a large number of flags. Of course homes displaying flags will not be visited.

⁂

Coal War Time Suggestion

A chunk of fire wood in your furnace will help heat the house quickly in the early morning and save one or two shovels of coal a day. Get hold of some wood and try this.

Dead trees in pastures at the outskirts of cities and villages may often be secured for the asking and a little use of a cross-cut saw and the axe on Saturday afternoon will be a great tonic to your pocketbook and your constitution, if you can get the time.

The New York State College of Forestry at Syracuse University has "loaned" Henry H. Tryon, of the Utilization Department, to the Wood Fuel Sub-committee of the State Fuel Administration, of which George D. Pratt, Conservation Commissioner, is chairman. Mr. Tryon will have charge of the committee's work in stimulating cord wood production and use in one of the four divisions in which the state has been laid out. Foresters from other state services will have charge of the remaining districts.

The New York College of Forestry at Syracuse University recommends the purchase of green cord wood wherever it can be obtained during the coming season. It shall be piled loosely in cellars or sheds of village and city residences, so that it will be seasoned for next year.

Owing to the probable continuation of the shortage of coal during next winter, authorities at the New York College of Forestry recommend the cutting or blasting out of crooked and dead specimens in the farm wood lots at the present time and working them into fuel lengths, so there will be a good supply of fire wood for sale when it is needed.

The fire places in many homes are not used enough

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.
400 Chestnut Street
Philadelphia, Pa.

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
610 Federal Street, Chicago, Ill.

SAY "I SAW IT IN BRICK AND CLAY RECORD"

according to the foresters of the country, and much good fire wood goes to waste every year. In addition, the increased use of local wood would tend to relieve the overcrowded transportation systems.

* * *

Brick Mason Alive to Brick's Possibilities

The following poem comes to us thru the Hydraulic-Press Brick Company, Chicago, Ill., same having been sent to them by a brick mason at Benton Harbor, Mich., who is an enthusiastic booster of brick and thoroly believes in advertising it as the best building material on earth.

No man has brains so illy filled;
Who would a house of lumber build;
When O. M. Southworth builds of brick,
For partly cash and part on tick.
No matter whether large or not
O. M. is always on the spot.

Just order bricks and lime and sand
And you will find O. M. on hand.
He builds the house to suit your taste
Without a penny's worth of waste;
And you will see on every hand
Where others fail, his work will stand.

Then when the house is all complete,
You sit right down and toast your feet.
Some winter night when all is storm
And wooden houses won't keep warm;
Your coal bill cut, insurance small,
No wind to penetrate the wall.

Your housing ills and other strife
Will flee from all your future life
If you have built a house of brick
Its comforts follow very quick;
But if you have a house of wood,
Change into brick and have it good.

* * *

Pioneer Clayworker In Northwest Quits

A career in clayworking, extending over a period of more than thirty-five years in the Far West would be exceptional indeed if it were not productive of a fascinating story. The experience of Charles Fischer is no exception. What he has to say, therefore, in a recent letter with regard to his life as a clayworker in the Inland Empire reads like a novel.

Mr. Fischer started a little clay manufacturing plant at Milwaukie, Oregon, in 1882. This is a suburb of Portland. "Prices were good at that time," writes Mr. Fischer, "but clays were bad, with much waste, especially in the making of stoneware."

Every piece of ware was hand-turned and wood was used for fuel. Wood was cheap then but has since advanced about one hundred and fifty per cent. in price. On the top of this advance in fuel cost, the price of flower pots, which was the chief product of the little plant, has descended to about one-third of what it previously was. Of course, the flower pots now made in this territory are made on machines or are jiggered.

"New ship yards are springing up within a few hundred feet from us," writes Mr. Fischer, "which will take away nearly all of the laboring men. Since I am getting old and worn out and not able to put in from fifteen to twenty hours a day trotting barefooted on the brick yard, molding brick by hand, or preparing pottery bodies or glazes, I will have to make up my mind to quit whether I like it or not. I have been active in this trade for more than fifty years."

* * *

Shall We Shoot the Trumpeter?

By Melville Davisson Post.

In the old fable the trumpeter captured by the enemy prayed consideration because he bore no arm, but he was answered that he incited the soldier to battle and was, therefore, equally dangerous. The policy of the enemy was sound. The trumpeter was an effective belligerent.

I think the German Government would consider our newspapers and periodicals as the most dangerous element of our fighting force. I think the Kaiser would rather shoot these belligerents than any other. And one can see the reason.

But for our magazines and newspapers America could not have been awakened; but for them it cannot be kept aroused to the impending peril of German world dominion.

Insidious German propaganda would lull the country to slumber but for the blare of these never ceasing trumpeters.

Beyond question it would be wisdom for the Kaiser to shoot them. But is it wisdom for our own government to shoot them? And they are effectively shot if an unwise revenue postal law drives them out of existence.

The staggering cost of paper and the unparalleled advance in labor and the price of every printing material, has removed any question of profit. This immense patriotic industry can hardly maintain itself; to now burden it with a heavy revenue tax and increased postal rates, is to decimate this arm of our fighting force. All the little magazines and newspapers must stand up against the wall, not for the Kaiser's bullet, but for our own.

We must cheerfully bear the burden of this war; we must bear it to save ourselves from the murderous Hun in his amuck of frightfulness. But can we not distribute the weight of this burden so it will not entirely crush to death the little newspapers and magazines?

The spirit of every one of them is fine and noble. They are so many more trumpets blowing all over the land; calling everywhere to every man; awakening the nation, firing it, steeling it, uniting it into one common determined purpose.

Surely we can find some way to rearrange this burden so the trumpeter can live!

Write to your Senators and Congressmen in protest against this destructive and disastrous postal "zone" law!

* * *

Finish The Kaiser Then—

Brick and Clay Record readers will be interested in the following letter, received from E. J. Moore, 1st Lieutenant, Q. M. C. N. A., written under date of March 2. The letter is sent from the office of Camp Quartermaster, Utilities Branch, Camp Sherman, Ohio, and reads:

"Enclosed you will find a check for $5.60. You can send *Brick and Clay Record* for two years to my home address, 216 Sweitzer street, Greenville, Ohio. Send the book 'Scien-

Erie Revolving Shovels

"3 men and 1 Erie provide our shale"

"We are tickled to death with our Erie Shovel—could not run our plant without it.

"We have one operator on the machine; one pit man who looks after the spotting of cars; one general utility man. These three men and the Erie easily give us enough shale to keep the plant supplied—enough for 100,000 brick a day." *D.D. Evans, General Mgr., WEST VIRGINIA PAVING & PRESSED BRICK CO., HUNTINGTON, W. VA.*

The above is a good record, because the West Virginia Paving & Pressed Brick Co. has an unusual shale which is very hard to dig. In other plants, where the material is not so difficult, two or three men and one Erie Shovel are getting out material for 150,000 to 200,000 brick.

Whether your conditions are hard or easy, you will find that the Erie gives you a big output which would otherwise require a far larger shovel.

And the Erie is RELIABLE. It is built far stronger than the usual standard of steam shovel construction—extra strength at every point of wear and strain. You are sure of a steady output of raw material.

The West Virginia Paving & Pressed Brick Company went into the steam shovel question very thoroughly before buying their Erie. They carefully compared the different makes of shovels. They wanted to be SURE to get the best revolving shovel on the market.

We advise you to be just as careful. Decide the steam shovel question on its merits. Get all the facts, and then pick the best machine.

We will be glad to send you our Bulletin "B." Write for a copy.

Ball Engine Co., Erie, Pa.

W.S.S.
WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT

Pledge
a specified
number each
week for
each member
of the family

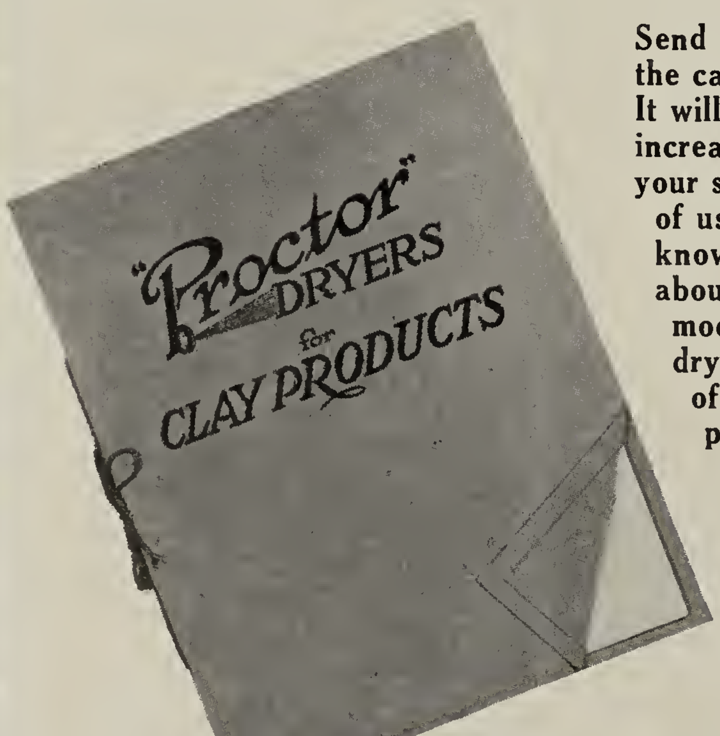
"Proctor" DRYERS

are designed and built for those high grade plants where safe, sure and speedy drying is imperative.

Proctor Dryers are machines that are controlled just as surely as a steam engine, and for this reason they are great successes in refractory and porcelain plants.

Very fine records in drying have been established which we will be glad to show you.

The Philadelphia Textile Machinery Co.
Sixth Street and Tabor Road
Philadelphia Pennsylvania



Send for the catalog. It will increase your store of useful knowledge about modern drying of clay products

tific Industrial Efficiency' to me at the address given at the top of this letter.

"I have been in the army since April, last. Find little time now to study other than literature along military lines. The *Brick and Clay Record* is kept on file at home and when the army finishes its job with the kaiser, I will try to catch up with the progress made by the clay products industry."

* * *

The MIDDLEMAN *in* REFRACTORIES

(*Continued from page 966*)

As stated before, get the confidence and co-operation of those manufacturers and determine to become their agent in a scientific way and convince them that you are willing to do the things which will be most profitable for them. Learn to know them in every way and to know their products and where those products can be used successfully. Co-operate with them, lay your cards on the table face side up and explain to them that you are willing and anxious to do everything they suggest which will increase the sales of their products in your market.

CANVASS INDUSTRIES IN YOUR MARKET

Make up your mind that you are going to spend some money in studying the conditions in the work where these brick are used. Send your man or go yourself and see the various kinds of industries in your town using material and try to get their confidence so you may have permission to place their wants before the manufacturer of the goods you represent. Secure all the information about the products you are representing and all the information you can concerning the places where they are used. Ask for the assistance of the manufacturer or his representative and co-operate with them. Do not sell a brick for a certain place unless you believe that brick will give good service. Do not sell brick to anyone unless you know what service they are to perform.

Do not compete by quoting low prices, but compete in quality and service. If you do not have the proper grade in stock do not offer a substitute, except in emergencies. Do not make the sale for the sake of the profit but sell for the sake of the future. Bear in mind that no deal is profitable unless both parties are satisfied. If you follow these suggestions I am quite sure you will have no difficulty in eventually building up a business in fire brick which will be profitable to you and to the manufacturer.

ONE BRAND OF BRICK NOT ENOUGH

You should not lead yourselves to believe that you can satisfy your trade by carrying one brand of fire brick in stock because no one brand will answer all purposes. On the contrary you should make up your mind that you will first study the conditions and ascertain about how many different brands of brick you should have on hand and if the trade will justify it you should see that your stock is always filled with a reasonable quantity of those brands.

If you go into the business on this basis you should not jump from one manufacturer to another, nor should you consider price. You should, of course, keep the manufacturer fully posted about the competition you have to meet in your local markets and he will then see the necessity of reducing the price or changing it to meet those conditions. You should not be discouraged if your brand or brands of brick fall down in certain places because those brick may be totally unfit for that work and you may not be able to secure the brand which would give the best results in that place. You will find some consumers who demand and specify certain brands of brick for their work, but you should not attempt to secure the agency for that brand just because that man wants it. On the contrary you should make a study of his conditions and decide whether the brand you sell will meet those conditions, and if so, you are in position to make the sale.

REFRACTORIES BUSINESS DIFFERENT FROM OTHERS

As I said before this business is so much different from any other which has come to my attention that it is most difficult to fathom. I thoroly believe today that most manufacturers of fire brick are very anxious to have their brick sold only for such places where best results will follow. I do not believe that any manufacturer is so anxious to sell his brick that he would have his agent or salesman offer the material for a purpose for which he knows it will not suit. On the contrary, I believe he is anxious to know all the conditions so he may decide whether or not his material will be satisfactory. I am satisfied that as time goes on you will find less competition along certain lines in the fire brick industry. Many brands of brick are good for one place and absolutely worthless for another. It is extravagance to use a high priced brick where a cheaper one will do, but it is very disastrous to use a cheap brick in a furnace where high priced brick are required. The many difficulties I have just pointed out are not confined to large furnaces or large consumers entirely, but the same difficulties are found in the plants of the small buyer as well.

VALUE OF INDUSTRIAL SURVEY

Those of you who have sufficient time and feel so inclined could use your efforts in making an industrial survey of your community. Get a full knowledge of the different kinds of furnaces and the many places where fire brick are used. You will then have some valuable information at your command and as you continually confer with the maker he could give you a general idea of the places where his brick will be suitable. It is evident that this preliminary work is expensive and requires a lot of time, but if you are going into the fire brick business on the proper scale it will be absolutely necessary to start this way. If, for instance, you had an industrial survey covering every manufacturing concern in your vicinity using fire brick and details showing the kinds of furnaces and use for which the brick are placed, you would then have knowledge of every kind of work existing in your territory. Eventually you would be able to know first hand whether or not the material you handle will please the consumer. If not, do not make the sale because he will not be satisfied. You will not hold the business and the producer will complain of your efforts.

CONCERNING FIRE CLAY

This same thing is true in the matter of fire clay. You can buy fire clay at any old price and you will get just as many qualities as prices. It is true that some of the cheaper grades of fire clay will answer the purpose in this or that place just as well as the more expensive ones, but you can-

Stanley Belting
Solid Woven Cotton
DOES NOT STRETCH

Belt stretch, the foe of belt efficiency, reaps a big harvest in the clay-products industry annually. In plant stoppages, in wasted labor, in the purchase of auxiliary equipment needed to overcome it, its total cost is high, and represents waste in a most inexcusable form.

You can prevent plant shut downs, you can discard your idler pulleys and other cumbersome, as well as dangerous, unnecessary equipment by installing

Stanley Belting
Solid Woven Cotton

because it will not stretch more than 2%, and this movement is taken up during the first 36 hours of use.

Thousands of plants are using Stanley Belting under all conditions, and they are willing to testify that it will not stretch; and that:

It is immune to the action of moisture, dust, heat, and gases.

It is the most flexible belt made: and being solid woven, has no stitches to break thru or plies to separate.

It is practically free from edgewear because of its reinforced edges.

It is "Immune to Strain."

You can obtain better belt satisfaction and greater efficiency from your power by equipping your plant with Stanley Belting, which will give long continued service at a low cost.

Stanley Belting Corp.
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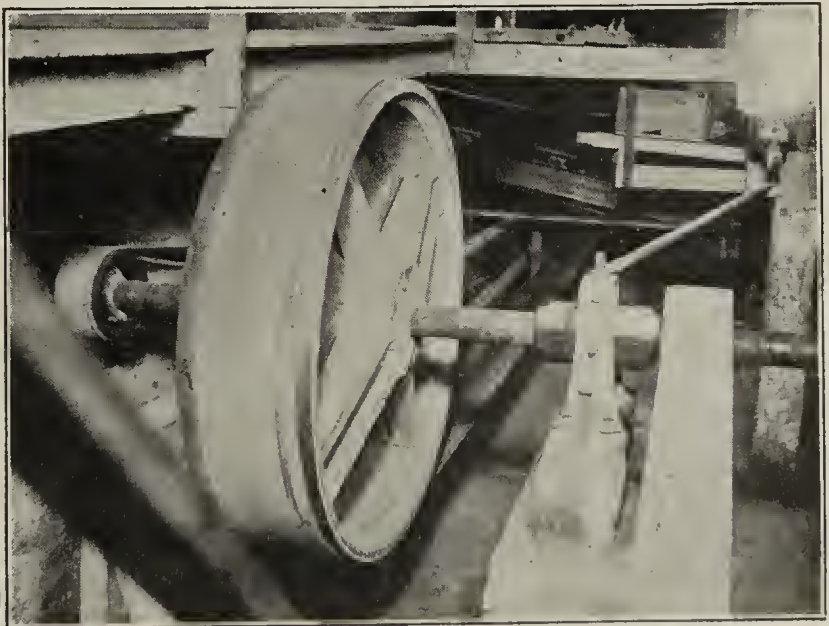

The Buckeye Clay Digger makes the dirt "PAY DIRT"

Many plants are equipped to mine the clay economically, others are able to mix it very thoroly, still others have ways to break it up before it goes to the grinding machines—but the plant that uses the BUCKEYE CLAY DIGGER can and does perform all of these operations and tasks, *in one operation.*

It dispenses with most of the pit gang, it mixes the clay, and it breaks it up fine. It makes "pay dirt."

The
Buckeye Traction
Ditcher Company
FINDLAY, OHIO

WAR SAVINGS STAMPS
WHO SAVES, SERVES

not decide that without full knowledge of the conditions. The use of cheap fire clay in laying fire brick of high priced quality may be disastrous to you and the consumer.

You will bear in mind that the word quality in fire brick is one which is rapidly passing out of use. There is no way to determine the quality of fire brick excepting by the results obtained. There is no method of measuring those results unless the brick are used in actual practice. A cheap brick may be first quality when used in the proper place, of fifth quality when improperly placed. A high priced brick may be fifth quality when improperly used, and the finest in the world when used in the right place.

⁂

America's Dependence on British Imports

Most of us think clay is something as common and abundant as sand or gravel. Consequently it comes as a surprise to be told by the Shipping Board committee on mineral imports and exports in Washington that even in this day of great shortage of ocean-going ships we have to import from England every year 200,000 to 250,000 long tons of clay. Last year we imported more than 250,000 tons.

Furthermore, a great part of this clay comes over in steamers loaded full and the rest in big steamers loaded with clay up to 50 per cent. and more of their maximum carrying capacity. These ships put into Fowey, England, for their freight. To get this clay on and off the boats requires 10 days on each cargo. An insignificant percentage of the clay is shipped as ballast. This represents small lots loaded into big liners at Liverpool. But it will be seen that the Importation of English clay consumes an important amount of ship tonnage measured in days time lost because of natural delays incident to the transport of this freight.

Why do our manufacturers pay the high freight rates now necessary in order to obtain an article like clay from England? There is as we all know, an abundance of clay in this country. A great deal of high-grade clay is produced here and of a character suitable for pottery, porcelains, and other articles which require clays of special excellence in their manufacture. But not much over half of the clay of this grade that our industries require is domestic. When war broke out in 1914 only a third of it was domestic. We have not been able to develop and equip our deposits fast enough to make these English clay imports unnecessary. In fact, it is doubtful whether we will produce as much high-grade clay in 1918 as we did in 1917. Our manufacturers want the clay but they can not get anywhere near as much as they want. The reduced output is due to railroad and operating conditions and is not related to the character or size of the deposits, which are capable of large production.

Domestic producers do not mine their clay quite as cleanly as their English competitors. Nor is the domestic clay as uniform in character. It will not bring the high prices paid for English clay, but more could be sold if it could be produced and carried to its market. Still more could be marketed if cleaner, more uniform clay were produced, for in that event the consumers would use a greater percentage of domestic and correspondingly less English clay in their mixtures.

However, our complete dependence upon English clay continues. We must rely on English clay as a chief ingredient of the dishes we eat from, the paper in our books and magazines, the porcelain in our electric-light sockets, and half a dozen other articles of less general use.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

---

The New South Philadelphia Works of the Westinghouse Electric & Manufacturing Company

Spurred on by the urgent need of the Government for ships, the Westinghouse Electric and Manufacturing Company has made a record in the erection and operation of its South Philadelphia Works, now devoted entirely to the production of ship propulsion machinery for the Navy and the Merchant Fleet. A little over a year ago, the present site was plowed field: now it contains seven large buildings which give employment to 2,500 people. These buildings, comprising a floor space of over 600,000 square feet, include a pattern storage shop, foundry, forge shop, power house, erecting shop, and two machine shops.

The greatly increased demands on the Westinghouse Electric and Manufacturing Company for steam-electric generating units, led to the necessity of seeking enlarged facilities, as those at East Pittsburgh were already crowded, and the South Philadelphia site, embracing 500 acres, was chosen as possessing more desirable qualifications than any other considered.

It is expected that eventually, this plant will be of a size comparable with the East Pittsburgh Works, which now employ in the neighborhood of 25,000 people, and cover a floor space of over 100 acres.

Electric energy for operation of the Works is obtained in the summer months from the Philadelphia Electric Company at 66,000 volts, and through the steam turbines in the Company's plant in the winter months, when the exhaust steam is used to heat the buildings. Distribution of current is made through-out the grounds at 6,600 volts, by means of lead covered cables laid underground, to substations located in the various buildings. Here it is changed to the current of the proper kind or characteristic for the work to be performed.

* * *

Goodyear Cord Tires for Motor Trucks

A new addition to motor trade literature, of unusual interest to motor truck owners, is the booklet entitled "Goodyear Cord Tires for Motor Trucks," now being distributed by the Goodyear Tire & Rubber Company, of Akron, Ohio.

The constantly increasing field for pneumatic cord tires for trucks makes it important that all truck owners become thoroughly familiar with the records and possibilities of pneumatic tires. And it is with the hope that the message of these tires may be driven home, that the new booklet is being issued. Its story is educational rather than argumentative or laudatory.

The message of the booklet goes right to the heart of things and embraces the entire field of pneumatic truck tire usage, involving their advantages in cushioning, reduction of truck repair expense, increased mileage of the truck, and their adaptation to many kinds of service.

Truck operators and engineers are coming to realize that pneumatic tires often offer distinct advantages—even on heavy vehicles. Where street conditions are difficult, loads fragile, greater speed imperative, and comfortable riding necessary, there is a growing tendency toward the use of single pneumatic tires.

The booklet outlines some of the kinds of service in which these tires are contributing to longer trips and more of them each day, specifying certain motor truck users that are successfully using pneumatics in widely diversified service.

Reduce the Size of the Scrap Pile with

SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

Kilns properly insulated with SIL-O-CEL reduce rejections due to over and under burned pieces and prevent heat loss from the kiln by radiation. The prevention of these losses results in a materially

Increased Output

SIL-O-CEL Insulation in either brick or powdered form is placed between the fire brick and outer red brick in kiln walls and over the crowns.

Because of its light weight, it does not add undue weight to the crowns. It is sufficiently refractory so that it will not fuse or shrink when placed against the highly heated fire brick.

SIL-O-CEL Insulation Insures:

More uniform distribution of heat throughout the kiln with the consequent elimination of over and under burned pieces.

More complete temperature control.

Protection of the outer brick work from violent temperature change and consequent cracking with its resultant air leakage.

Possibility of using thinner wall construction without excessive radiation losses.

Eliminating the necessity of over heating the hotter portions of the kiln in the endeavor to bring the cooler parts up to temperature.

Send for Bulletin No. B-5 on Kiln Insulation

CELITE PRODUCTS CO.
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PITTSBURGH
Oliver Bldg.
LOS ANGELES
Van Nuys Bldg.
SAN FRANCISCO, Monadnock Bldg.

SAY "I SAW IT IN BRICK AND CLAY RECORD"

"It Replaces Four or Five Men"

The B-G Portable Belt Conveyor

is used with success on the plant of The Plymouth Clay Products Co., Fort Dodge, Iowa. Recently they wrote the following:

"We have had this machine in use for some time. It is 15 feet long and pulled by a 2 H. P. motor. The Conveyor does excellent work, and all that they claim for it, and in our case replaces four or five men. We are using it to move clay from cars into the building and from one place in the building to another. It has proven equally good in each case.

"We consider that the machine would be excellent for moving clay, coal, sand or any material of that nature."

When writing for information, state length desired, and voltage, phase and cycle of your current

Barber-Greene Company
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327 Jefferson Ave., West., Detroit.
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519 Andrus Bldg., Minneapolis.
Tribune Bldg., New York City.
2013 Market St., Philadelphia.
207 Fulton Bldg., Pittsburgh.

Canadian Sales Agents—Mussens, Limited, Montreal.
Outside of U. S. and Canada—Allied Construction Machinery Corporation, 120 Broadway, New York City.

It also points out the difficulties that truck engineers have experienced in the use of dual tires—two tires on one wheel—in the effort to secure greater cushioning effect, and how the big single tires invariably outwear them, and afford better cushioning.

Other points—the construction of the tires, the method of application to the rim, the simplicity of making tire changes, and the results that may be expected—are portrayed. And in addition there is a table of tire sizes and carrying capacities and the inflation pressures recommended for each. There are also several letters from pneumatic truck tire users outlining their experience with them.

The Goodyear Tire & Rubber Company announces that the booklet is free to all who will ask for it at the company's branches and service stations throughout the country, or write to the main offices at Akron, Ohio.

⁂

Semi-Trailers Replace Heavy Motor Trucks

"Heavy motor trucks are not always a good investment," asserts H. C. Fruehauf, general manager of the Fruehauf Trailer Co. of Detroit. "Were the average user of motor trucks to carefully analyze his haulage problem, he would readily perceive the fact, and protect his pocketbook accordingly.

"So many vainly assume that because their maximum load will reach a total of 5 or 6 tons, that it is essential to have a truck of that capacity, when really a smaller unit will care for the average load. A large truck depreciates much more rapidly running light, and increases the cost per ton mile, while a smaller unit loaded to its capacity will show better results.

"A solution of this vexatious problem is really accomplished by using Fruehauf semi-trailers.

"A 6-ton unit attached to a 2-ton truck or tractor furnishes the ideal method of handling variable loads, without increasing the cost."

The capital stock of the Fruehauf Trailer Company has been increased to $150,000, and the following officers elected: President and treasurer, A. C. Fruehauf; vice-president and general manager, Harvey C. Fruehauf; secretary and sales manager, E. L. Vosler.

Production of trailers has been doubled during the last two months and the dealer organization is now being enlarged, according to Sales Manager Vosler.

The Queen City Motor Delivery Company of Cincinnati, Ohio, have been appointed distributors for the Fruehauf line in Cincinnati and surrounding territory.

⁂

The Yellow Strand Joke Book

Preparedness is Safety, so—if you are stocked up on good spicy jokes you will not be embarrassed the next time you go out to dinner, and find that your favorite jokes are all known to the party, and that you simply cannot summon up a single new quip.

The Broderick and Bascom Rope Co. of St. Louis, Mo., have earned your gratitude by offering you preparedness. In a booklet called the "Yellow Strand Joke Book" they have accumulated a long string of good ones, all of them "fit to tell," and with it you can refurnish your stock of jokes in great shape. It will be mailed on request.

⁂

Brown Instrument Opens New Office

Due to the demand for their pyrometers and other instruments, the Brown Instrument Co. of Philadelphia have opened new offices in St. Louis, Mo. in charge of Paul H. Berggreen.

The offices are located at 2086 Railway Exchange Building, St. Louis, and from this point Mr. Berggreen will be able to give prompt service to the customers in this district.

BRICK and CLAY RECORD

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Standards of Practice for Business Publications

The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

The EDITOR'S CORNER

The Freight Rate Increase

THE ORDER of Director General McAdoo raising freight rates on an average of twenty-five per cent. and abolishing all lower intra-state rates, met with very little surprise in the clay products manufacturing industry. That is to say, most manufacturers were prepared for some news along this line, but very few anticipated that the increase would be as heavy as it has proved to be.

Examination of one of the first statements concerning the director general's order as published in the "Official Bulletin," reveals the fact that brick is to receive an increase of two cents per one hundred lbs. This, of course, means forty cents a ton or approximately an increase of $1.20 per thousand. These advanced rates, it is announced, will go into effect on June 25.

With price advances on brick and other clay products occasioned by curtailed production and increased operating costs, capped by the recent freight rate increase, it must be more and more evident to thinking manufacturers that opportunities in normal building are growing smaller and smaller. While prospective investors, contractors and builders hesitated in the past to proceed with contemplated operations on account of so-called high prices, which were really not so high when compared with the cost of other commodities, certainly *now* there will be more excuse for failing to build.

The placing of the industry on a war basis is fast being accomplished and we have to look more and more in the future to government building and housing projects, occasioned by war activities, to furnish the necessary business to keep plants operating even to curtailed capacity. When we consider that the Government is planning to spend millions this year on building, it may be just as well that clay plant capacities be reserved for this work.

The agricultural field offers splendid opportunities for business development during these unusual times, when plans which would ordinarily proceed are badly disarranged.

* * *

The Coal Question

THE HARRASSED clay products manufacturer was greeted the other day with what appeared to be a very consoling message. P. B. Noyes, chief of conservation of the United States Fuel Administration, was speaking. He was talking before the convention of the International Railway Fuel Association in Chicago on Friday, May 24. Mr. Noyes stated that there had been too much talk about shutting down the so-called "non-essential" industries, and that a little investigation showed that down this road lies financial ruin and unemployment of labor on a scale which would bring disaster at home and failure in war. "We are apt to forget," continued Mr. Noyes, "that what now are called the non-essential industries are the absolutely essential industries of peace times. They are more than that—they are, even in war times, the essential means for life and happiness to a large portion of our population."

Mr. Noyes emphatically stated that fuel must be supplied to the so called non-essential industries of the country as well as the ones actually engaged in war work, if the nation is to avert a panic.

It was certainly a very reassuring message. Upon its receipt clay products manufacturers took heart and saw the solution to one of their most perplexing problems, namely, the scarcity of sufficient coal to operate to the percentage allowed by the United States Fuel Administration.

However, the reassurance did not last long, for on May 30, in Washington, D. C., Fuel Administrator Harry A. Garfield issued a statement in which he says that with the country facing another coal shortage, prospectively as serious as that of last winter, it is necessary to put into effect a consumption restriction program for the conservation of fuel to governmental agencies and industries essential to the conduct of the war.

A preference list is to be established in this connection under which bituminous coal will be distributed to consumers in the following order of priority:

1. Railroads.
2. Army and navy.
3. State and county institutions.
4. Public utilities.
5. Retail dealers.
6. Manufacturing plants on the preferred list.
7. Manufacturing plants not on the preferred list.

The fuel administration has drawn up a complete list of all coal consumers, each of which is placed in one of these seven columns. Consumers listed in the first six classes will be given all the coal they require. Consumers in the seventh class, in which is included clay products manufacturers, will be compelled to get along with the supply that remains after the other six classes are satisfied.

While a subsequent press dispatch stated that the above order referred to anthracite coal only, those who are in touch with the coal situation say that the order undoubtedly refers to bituminous coal, particularly in the Middle West where little, if any, anthracite is used by industries.

The outlook does not appear to be very hopeful for manufacturers in class seven. It is very evident that there is going to be a coal shortage equal at least to that of 1917. It certainly behooves clay products manufacturers to purchase what coal they can during the coming summer months and get it moved while the tax on the nation's transportation system is not so severe. Coal may be stored safely, and if it so happens that the amount purchased and stored cannot be profitably employed during the fall and winter, it can easily be sold at retail at a profit.

* * *

McAdoo Again Speaks on Building

SECRETARY OF THE TREASURY W. G. McAdoo has made a number of statements since the first of the year with regard to the government's attitude on building projects. The first of these statements was totally discouraging, the second was more hopeful, and the last, which is given below, is the most encouraging of all.

Senator Calder, speaking before the Senate, made some remarks on May 9 with regard to the housing situation in New York State. Secretary McAdoo took exception to his statements and in the following letter, under date of May 11, said:

"Dear Senator Calder:

"From the proceedings of the Senate of May 9, 1918, Congressional Record, page 6755, you are quoted as saying:

" 'At no time in the history of New York have we needed more than at present new buildings for people to live in. We are prevented from having them to some extent because of the attitude of the Treasury Department in advising the banks and mortgage companies against loaning money upon mortgages on real estate. If the Treasury Department changed its attitude, the money could be obtained, new building would be encouraged, and we might then be able to help the housing problem we are facing here.'

"This statement is so wholly without foundation that I am amazed that you would make it. The Treasury Department has at no time taken any such attitude, nor has it ever advised banks or mortgage companies against loaning money upon mortgages on real estate.

"I have advised against the construction of unnecessary buildings during the period of the war, but I have laid emphasis upon necessary building. I have stated publicly that—

" 'Where it is a question of need—be it on account of sanitary conditions or because without such new construction other operations essential at this time for the welfare of the country would suffer—there is no doubt that the work should be undertaken. This applies equally to construction work in cities and towns and in farming districts.'

"In a letter to Mr. Gompers, dated March 15, 1918, in reply to a resolution adopted by the Building Trades Council of San Francisco, I said:

" 'Building operations which are not required to protect the health or provide for the comfortable needs of our people or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war should be postponed.'

"The attitude of the Treasury Department has been that capital which is needed during the period of the war should not be employed in the construction of unnecessary buildings at this time. But there has never been any suggestion that buildings actually needed for the health and protection of the civil population or for the conduct of essential business of the country should not be constructed during the period of the war.

"I hope that you will correct your erroneous statement by the inclusion of this letter in the proceedings of the Senate."

* * *

A Labor Problem of Importance

NOT ALL of the labor problems with which the drain tile manufacturer has to contend are to be found on the plant. To be sure, there are enough of them to be met with in the manufacture of tile, but the present war situation has brought us face to face with another labor problem, which is found in the field where the tile are being placed.

For years it has been the custom for the farmer to employ a crew of hand ditchers who dug the necessary trenches for the installation of a clay tile drainage system. Altho this work is tedious and laborious, requiring strong muscles and a trained eye to dig a deep and straight ditch, hand ditching it seems in the past was the most logical because labor has been cheap, comparatively speaking. It has been hard for a machine to compete with these hand ditchers for the reason that when a farmer employed a ditching machine he expected the work to be done at a lower price than by hand. Now it has been possible to dig drainage systems mechanically at a cost equal to hand ditching but it has not been universally possible until the present time to use ditching machines at a lower cost per foot of drainage.

Reports received from all directions indicate an alarming situation with regard to labor supply among hand ditchers. Some drain tile manufacturers state that it is impossible to get tile laid in the field because of the scarcity of men accustomed to do this work. If this is a fact, the clay tile manufacturer's outlet is seriously menaced.

We are happy to say, however, that it is possible in this case to turn to machinery. Mechanical ditchers can dig a better ditch for less money than can the laborer. Every drain tile manufacturer who finds himself up against the labor problem mentioned above should waste no time in investigating the possibilities of ditching machines in order to assure the movement of drain tile as it is manufactured this summer.

BRICK MEN TOLD THAT UNCL

Clay Products Manufacturers Are Doing No More Th
and Tile for Every Class of Governmental Constructi
Work That Can Be Done to Gain Wider Acquaintance f
tion is Advisable at This Time to Counterbalance the A

By Wa

UNCLE SAM is not playing favorites in his war-time building operations. He is not intentionally manifesting a preference for lumber and wood products to the neglect of brick and hollow tile and the other more enduring materials. The legislation that is half way thru Congress to requisition timber and timber products for war purposes should not cause any alarm on the part of brick and clay products men because it is intended solely to serve the wooden shipbuilding program and does not aim to inject a new element in the building construction situation.

The foregoing is, in substance, the answer that has been made at official Washington to the protests and pleas that have recently come from the Face Brick Dealers' Association of America and other organizations in the trade. The officials at the capital have, in effect, told the brick and clay products interests that the lumber bug-a-boo is a case where the bark is worse than the bite. Uncle Sam has, to be sure, been using an impressive amount of lumber and will continue to do so, but there is no occasion for brick or clay products interests to be stampeded because there are very special considerations involved that rob the seeming preference of the significance that might be attributed to it.

UNCLE SAM NOT TO SNUB CLAY PRODUCTS

Two-fold is the sentiment which is finding expression in the communications from trade circles to the powers that be at "war headquarters." On the one hand there is amazement and resentment that Uncle Sam should seemingly lean so heavily to frame construction. On the other hand there is proportionate unrest by reason of the fact that the Government seems, in its present moves, so blind to the manifest advantages of brick and clay products as mediums of construction. This attitude appears to the bystanders the more inexcusable when it is well known that the trade has large stocks of face brick, etc., on hand, whereas, the Government is admittedly having all kinds of difficulty in getting out sufficient stock of timber and in arranging transportation from isolated centers of production to the seats of industrial activity. Incidentally there is the consideration that has been brought forward by President Jno. M. Stoner that a policy of more brick and less frame construction would operate to relieve the excessive demand for the labor of carpenters, of which there is admittedly a serious shortage, and would at the same time provide suitable employment for bricklayers, who are now idle in large numbers owing to the derangement of building operations in the commercial field.

While no official, naturally, is willing to be quoted on the subject, it is admitted to me confidentially that on the face of things the brick and clay products men have some ground for their resentment at Uncle Sam's seeming blind allegiance to frame construction. However, the officials insist that this is a case where judgment has been passed on surface appearances and temporary conditions. They insist that Uncle Sam has no intention to snub brick and clay products, and that this will become apparent in due course. In proof of this latter logic they point out that arrangements are already being made to erect brick or tile houses in the vicinity of some of the shipyards and munitions plants where Uncle Sam has undertaken to help solve the housing problem.

TEMPORARY CONSTRUCTION TO BE ABANDONED

The officials admit frankly—there is nothing else for them to do—that beginning with the construction of the military cantonments the Government has cast the die in favor of frame or stucco construction without apparently giving even a moment's heed to the claims of the materials that will endure. However, they insist that in a majority of the class of instances cited the motive lay not in a blind prejudice for wood but in the fact that buildings must be made ready for occupany in the shortest possible length of time. In other cases—and this accounts for some of the current episodes—the buildings are so essentially of temporary character that the men in authority will not hear of anything but the cheapest form of construction that will answer the purpose. Apropos this latter, it is pointed out that in every field of war-inspired activity Uncle Sam is rapidly getting away from the idea of temporary construction and is looking with more and more favor on permanent or at least semi-permanent construction.

Pursuing the same subject farther and taking a new slant, the officials contend that brick and clay products men have taken alarm at Uncle Sam's clamor for wood for certain purposes for which neither brick nor clay products would serve as a substitute. As they sense the situation, the brick and clay products men have lumped all the Government's lumber purchases for comparison with the distressingly modest requisitions for brick and clay specialties when as a matter of fact the bulk of the lumber is required for aeroplane construction and wooden shipbuilding, or, mayhap for new railroad cars, for none of which, of course, there is an alternative in the brick and clay line.

As further evidence that it is, in a measure, a false alarm that has aroused the brick and clay products tradesmen to a feeling of resentment over supposed discrimination, there has been explained to me what is really behind the timber legislation in Congress. Conspicuous among this legislation is the Act known officially as S.3426, which has passed the U. S. Senate and is pending

M IS NOT PLAYING FAVORITES

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Benefits and Advantages of Brick and Tile Construc-
tages Set Forth for Lumber by Various Organizations

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in the House of Representatives, with what chance of approval it is difficult to say at this time. This measure is very broad in its scope empowering the President to requisition and take possession of any standing or fallen timber and to make use of any logs, manufactured lumber and all machinery, equipment and appliances of every character necessary for lumber production.

This proposal has, as to its purpose and ultimate effect, been the subject of considerable speculation in brick and clay products circles but the uneasiness in that quarter was as nothing compared with the agitation of some of the men in the lumber industry who foresaw the seizure of their planing mills, etc. As the matter is explained to me at Washington however, there is no such malice aforethought as has been suspected. The measure that is now half a law is claimed to have been put forth solely in the interest of the mercantile shipbuilding program and the chief and primary purpose is to enable the Government to lawfully take possession of and do lumbering in various valuable timber tracts in the South, title to which is in dispute between rival claimants or is of such uncertain status that it is impossible to determine at short notice the rightful owners of the land.

CLAY PRODUCTS MISSIONARY WORK ADVISABLE

To sum up the situation, it may be said that brick and clay products men are doing no more than their duty to urge the use of greater quantities of brick and tile for every class of governmental construction to which it is adapted but there is no occasion for them to be discouraged or feel that they face the handicap of a prejudice in favor of wood. By the way, the suggestion may be ventured that all the educational or "missionary" work that can be done to gain wider acquaintance for the benefits and advantages of brick and tile construction is advisable. The Advisory Council of Forest Industries, on which various branches of the Government have representation, is continuously at work on the problems of the timber-producing and timber-using industries and any clearing house designed to similarly further the interests of brick and clay products should help to counterbalance advantages.

The price equation is one which is bound to enter into the war-time situation and may exert considerable influence in the rivalry between such products as timber and brick. The bill that has been passed by the Senate empowers the President to fix the compensation for manufactured lumber and other timber products. Somewhat the same force of Governmental opinion with respect to prices may, as regards brick and clay products, be forthcoming sooner or later from the Federal Trade Commission. The Commission finds one of its chief responsibilities latterly in the conduct of studies of cost of production in the various industries where the Government is prepared to take for war purposes all or a large share of the current output and where it is desired that a fair and equitable profit be returned but without suspicion of profiteering.

Expectation that the Federal Trade Commission may ultimately be led to conduct price-determining investigations in various brick and clay products fields is prompted by the circumstance that the Commission already has under way, is, indeed, nearing the completion of an investigation as to the cost of producing refractories and fire brick. Such investigations, it may be added, are nothing unusual but form a regular part of the routine of the Trade body. Indeed, under the Act creating it the Trade Commission is authorized to not only investigate the organization, business, conduct, etc,, of corporations, but to require annual and special reports from them.

COST OF PRODUCTION REPORTS

From what I gather in Washington there has been encountered comparatively little difficulty by the Trade Commission's economists and accountants in getting accurate detailed figures on such items as labor, materials, etc., in the fire brick field, but a snag has been struck in determining in many an instance what valuation, if any, is allowable for good-will. This good-will proposition is bound to be more of a "poser" in the brick and clay products field than in many another industrial environment because there are in this industry so many concerns that have been built almost from nothing, as we might say, and in which expansion of authorized capital has by no means kept pace with the development of the business.

Not in isolated instances but in dozens of cases in the brick industry and allied lines, an individual or a group of persons have started a small business with modest capital stock and have nurtured that business to a giant growth without ever bothering to increase the capitalization. In such cases the profits have presumably gone back into the business. Maybe an individual or partners even neglected to draw out adequate compensation or a fixed salary. Result, a top-heavy structure poised on a small pedestal, —a concern with a turnover that is a dozen times, or a score of times, or maybe a hundred times as great as the paid-in capital. The unforeseen disadvantages of this plan of operation were first disclosed when Uncle Sam put into effect his very stiff regulations governing the payment of the "war tax" known as the Excess Profits tax. Now, the brick men who have been called upon to make to the Federal Trade Commission a show-down on cost of production find another disadvantage in the difficulty of gaining full recognition as fixed assets for "intangibles" such as good-will, trade-marks, etc.

PATENT VALUATIONS

Yet another angle, peculiar to some extent to the brick and clay products industry, still further complicates the task of determination by the Trade Commission of the total "investment" on which an allowable percentage of profit is to be figured. For the brick or clay products man who owns outright the patents under which he operates this extra complication does not exist. A valuable patent is unhesitatingly recognized as an asset albeit the owner may be required to write off a portion of the book value of the patent at the end of each year that brings it closer to expiration. Very different however, from the position of the patent owner is the brick or clay products firm that owns no patent outright but has a license to operate under a patent of recognized prestige in the trade. In the eyes of such licenses this concession is clearly valuable, for, like as not he has the exclusive right to manufacture and sell in a populous territory the specialty in question but brick men who have lately been in contact with the Trade Commission find that it is no easy task to place a consistent valuation on such territorial manufacturing and selling rights and then to convince the Trade Commission's experts that this sort of sectional monopoly within the trade has money value just as have factory buildings and equipment.

* * *

Vitrified Brick for Military Highway

The Delaware State Highway Commission, in awarding contracts a few days ago for 27 miles of road in different parts of the state, selected vitrified brick, with concrete foundation, for six miles of the most important section, that between Wilmington and Philadelphia (to the Pennsylvania state line). This road has the heaviest and most important hauling in the state, and it has the steepest hills as well. The grade of some of the hills, incidentally, is to be reduced. This is part of the military and commercial traffic highway connecting New York and Washington, and it has become one of the most annoying sections because of its condition.

The hilly portion, known as Penny Hill, just north of Wilmington, 2.46 miles, has been awarded to Richard Hopkins of Troy, N. Y., for $237,792, and the remainder, 3.75 miles, from Penny Hill to the Pennsylvania line, to the Victor Olsen Contracting Co. of Youngstown, Ohio, for $343,434.70. This section of road will serve to give a brick pavement the supreme test. The total cost of the 27 miles of road contracted for by the highway commission was $1,937,286.70, of which, incidentally, General T. Coleman du Pont has agreed to pay $643,731.80, having offered to build three of the roads under consideration and present them to the state.

Delaware's geographical position places it where the government has decided that it must interest itself in the road program and during the past week two of its agents —J. E. Pennypacker, chief of management of the Bureau of Public Roads, and H. K. Bishop, engineer for the Tenth Federal Aid District—were sent there from Washington, and in company with Charles M. Upham, chief engineer of the State Highway Commission, made a tour of all the newly planned roads, several of which are really government highways because of the military traffic passing over them and their proximity to Delaware River fortifications. The result was that they agreed to make an effort to have the government get material here rapidly, and accordingly work has been started on all of the important projects, some of which are hanging over from last year, having been delayed by freight embargoes.

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A. C. S. Chicago Section Meets

Twenty-one men interested in the subject of ceramics, met at the Fort Dearborn Hotel, Chicago, Ill., on Saturday afternoon, May 18, at a luncheon arranged by the Chicago Section of the American Ceramic Society.

A very instructive talk on how to present statistics and facts graphically, was given by J. K. Moore, production manager of the Streator (Ill.) Clay Co. and the Monmouth (Ill.) Clay Products Co. Mr. Moore illustrated his talk with curves and charts which showed facts of certain phases of the clay industry.

B. S. Radcliffe, ceramic engineer for the Midland Terra Cotta Co. spoke on the induced draft system of burning brick in periodic kilns. He gave some very valuable information on how this system was used successfully on one of the large paving brick plants in Illinois.

The use of ceramic materials in architecture was the theme of Louis H. Sullivan's talk. Mr. Sullivan is one of the country's best known architects and was one of the first men to see the value of terra cotta in modern architecture. He predicted that the future would find greater developments in the manufacture of this wonderful building material.

Dr. E. W. Washburn, of the University of Illinois, told of the important work which the national research council, in co-operation with several other organizations, was doing in searching the country for various raw materials used in the manufacture of ceramic products. This was decided as the most important phase of the ceramic industry at the present time. He also stated that scientific researches were being made on refractory products in an effort to bring the manufacture of these products to a higher standard.

The next meeting of the Chicago Section will probably be held in September.

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Manufacturing Activity in New York State

The New York State Industrial Commission, in its report on manufacturing activity in April, 1918, states that the factories of New York state employed a slightly smaller number of operatives in April than in the month previous but increased the total payrolls in the same period. Eight out of eleven industry groups in the state shared a decrease of one per cent. less workers on its payrolls. Stone and clay products, which is one of the divisions, comprising lime, cement, plaster, brick and tile, showed a gain of three per cent. in number of employes. All the sub-divisions of the stone, clay and glass industries showed improvement in April, as compared with March, except glass manufacture. Brick, tile and pottery products added eighteen per cent. to the number of employes, which of course was to be expected since April is the month for resumption of operations. Business in these industries, however, is much behind last year, recording fifteen per cent. less workers from April, 1917, to April, 1918.

The average weekly earnings per employe for all the industries was $19.25 for April, being a gain of 54 per cent. over March, which was the record up to that time. This average is computed by dividing the total payrolls by the number of employes on the payrolls, and as such, includes men and women both in shops and factory offices. The corresponding averages per week in April, 1917, 1916 and 1915 were respectively $15.50, $14.15 and $12.54.

DITCHING MACHINE AIDS SALE *of* DRAIN TILE

Finer Work With Greater Speed at Lower Cost Possible With Mechanical Ditcher, Operation of Which is Not Limited to Certain Seasons—Most Important of All, Machine Increases Sale of Tile

THE ANALYSIS of the drain tile situation as it now exists, brings to light some very interesting facts, which we wish to call to the attention of our readers so that they may take whatever action is deemed advisable.

The recent curtailment order of the fuel administration cuts the production of drain tile but twenty-five per cent., which will have very little effect on drain tile manufacturers for the simple reason that they have stocks of tile on hand, for which there is a wide market, but owing to peculiar circumstances, these stocks have not yet been moved.

The fact that the Department of Agriculture and agencies which co-operate therewith, is now advocating the use of drain tile and demonstrating the advantages to be gained thereby, is proving of tremendous value to the manufacturers of this commodity. There are thousands of acres of uncultivated and undrained land thruout the United States which, if given the necessary attention, could be made to yield valuable crops. There is also much land which by being properly drained could be made to give a substantial increase in crop production.

Thirteen drain tile manufacturers were written for data concerning their experience with mechanical ditchers. Nine of these concerns, or 70 per cent., replied from points in Ohio, Indiana, Kentucky and Alabama, and from their replies was obtained material for the accompanying article. Of the nine replies all recommended highly the use of a ditching machine and stated that it had a marked influence on the sale of their product.

Farmers have plenty of money with which to buy tile and a great many farmers are educated up to the point of wanting to underdrain their land. Why then is it difficult for drain tile manufacturers to sell their product? The great labor shortage which exists all over the country is the answer to this question. The drain tile manufacturers are ready and eager to sell; the farmer wants the tile and is willing to pay the price, but he is unable to secure the necessary man-power to lay the tile. This, however, does not mean that the tile manufacturer should sit idly by, discouraged with the turn of events. It is up to him to find the solution to this difficulty.

MECHANICAL DEVICES TO REPLACE MAN-POWER

There is a way out of this trouble—a way that has been tried and found successful in many localities. The way to get around the man-power shortage is by the adoption of mechanical power and right here is where the tile ditching machine plays the leading part.

Brick and Clay Record has received data from a number of users of ditching machinery and is glad to be able to present these facts to its readers in this article.

The plan by which the drain tile situation might be improved with the use of a trench excavator is simply this. The drain tile manufacturer should buy one or more mechanical ditching machines and either contract to do the ditch digging himself or else sell a part interest to someone who will operate the machine and take care of the ditching. In this way the labor requirement is considerably less than where hand ditching methods are employed, thus making it possible to lay tile in a great number of districts where heretofore, a lack of a sufficient supply of labor prohibited the tiling of land.

Everyone is more or less familiar with a traction ditching machine. They resemble somewhat large tractors and are complete units in themselves, supplying their own power for digging and traveling. They are operated by steam, kerosene or gas engine power and it does not take much training to learn how to operate one of them. Some firms who handle this machine give a three-day demonstration on how to operate it.

TILE DITCHER SAVES TIME.

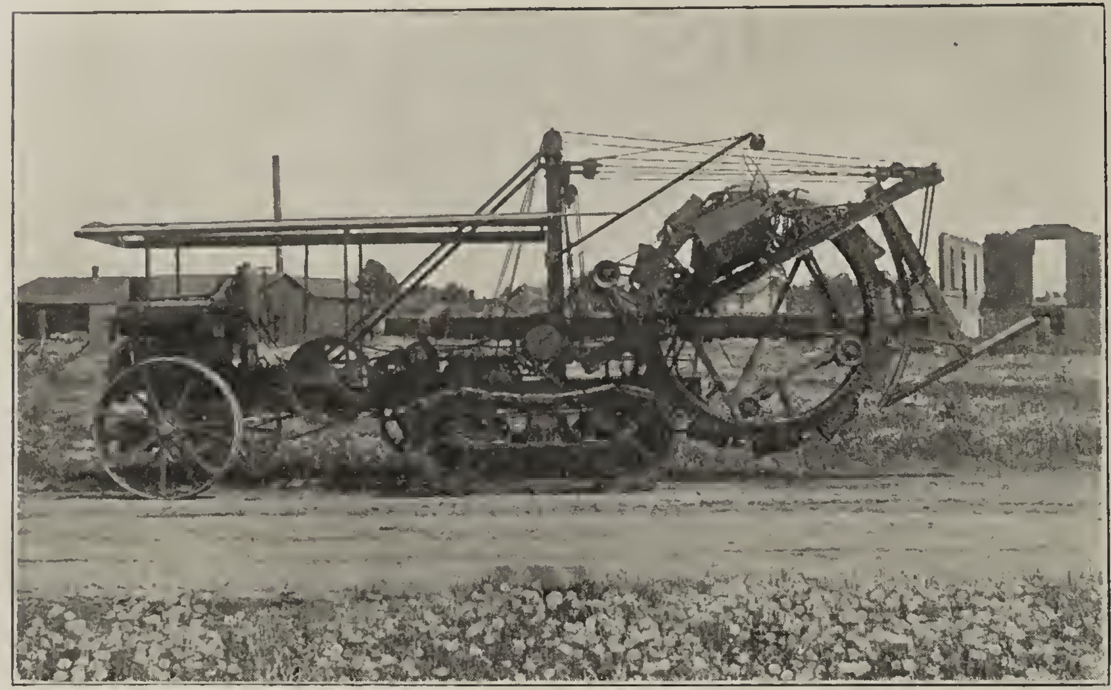
The speed with which trench digging can be accomplished by using a tile ditcher is much greater than where hand labor is employed. This is a material advantage to the farmer since in this case his work is not interrupted to as great an extent as where the work is done by hand. One plant reports that by using a tile ditcher an average speed of about 100 rods of ditching in ten hours was obtained. The same plant tells us that they have cut as much as 200 rods of trench two feet deep in twelve hours. Another plant states that the average speed of trench excavating where a machine is used is anywhere from 80 to 200 rods a day.

The use of a mechanical ditcher is not so much at the mercy of weather conditions, since this work can be done in spring, summer or autumn, while hand digging is usually accomplished only in spring months when the ground is fairly soft. Also, the hauling and filling of earth does not have any bad effect upon the following crops.

Because of the accuracy and ease with which a ditch can be excavated, farmers prefer the ditching machine. Usually, better grades are obtained and truer lines formed than where hand ditching is employed. At no place where the trench digging machines are used is there any antagonism found between the hand ditchers and the operators of the machine.

SALE OF TILE INCREASED

In comparing the cost of digging trenches by machine and by hand labor it is found that it is cheaper to use the mechanical ditcher, altho in some places the cost is about the same. However, the big point to consider is what effect the use of ditchers will have on the drain tile situation. Every concern that owns a ditcher agrees that it has been a help to him and some say that they have increased the sale of their drain tile as much as one hundred per cent.



A Wheel Type of Machine Excavator Which Has Proven Successful for Drain Tile Ditching

A condensed report of the data received in letters from the different drain tile manufacturers who have used the machine trench digger, reveals the following:

The number of machines operated by the firm, varies from one to three, some of which have been in use for six years.

Two men are required to do the work when the machine is used.

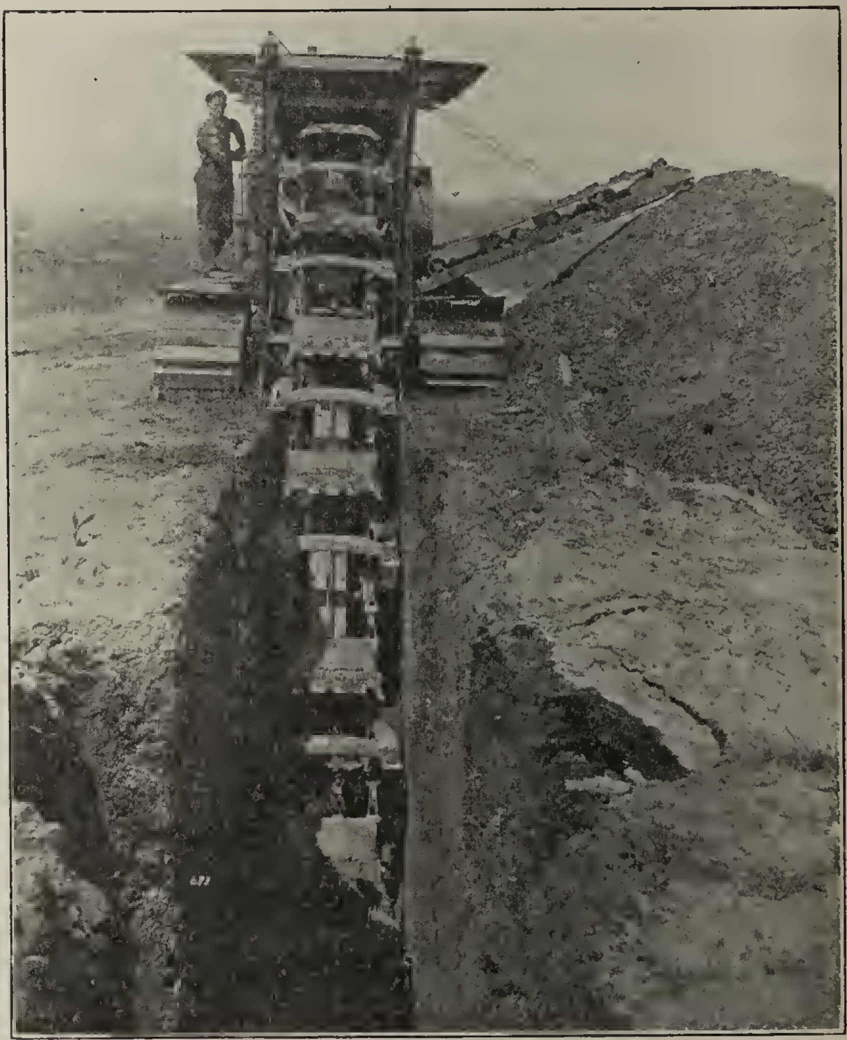
The machine works very well on land which is fairly level and which is reasonably free from stone. However, there are cases on record where the trench digger has worked on a fifty per cent. grade. It does not work very well on swampy soil.

The plan of operation varies somewhat with each plant. One manufacturer takes a contract for completing the whole job, that is, digging the trench, furnishing and laying the tile, and refilling, or it takes a contract for only digging the trench. For doing the job completely they charge a fixed sum or a set price per yard. For digging only the trench they charge a certain sum per yard per depth of cut. The work usually costs the manufacturer about two-thirds cents per inch of depth per linear rod. The minimum cost is twenty cents per rod. The cost of doing this same work by hand in this territory is about twenty-five and one-half cents per linear rod.

Ditching by Machine Can be Done Even in Late Fall When the Ground is Fairly Hard

Another manufacturer finds it of advantage to sell either one-third or one-half interest of the machine to the operator who then runs it as if it were his own business. In this way much better work is obtained than if the tile manufacturer hires men to operate the machine. A third tile producer hires out a machine at $10 per day, altho he generally contracts to do the work at a certain rate per foot.

Several drain tile men make a charge of one and one-half cents per inch depth per rod for digging the trench and laying the tile, but do not include the covering and filling the ditch in this. It costs them in labor, fuel and repairs about one cent per inch depth per rod, not including interest and depreciation to do this work. Another man reports that it costs him eighteen cents per rod, not including a survey, to do this same work. Still another party states that he charges ten cents per foot depth per rod to do the trench digging and that his labor cost is about one-third of this.



Only Two Men Are Required in Most Cases to Complete the Whole Task

Space will not permit the publication of all of the letters we have received in regard to the advantages of the drain tile manufacturer owning a mechanical ditcher. However, we reproduce one communication which is typical of the nine letters we have received on this subject:

DRAIN TILE MAN RECOMMENDS DITCHER

"We are glad you are taking an interest in ditching machines, we presume with the idea of stimulating their use.

"Something of this kind will have to be done, as labor is so hard to get that drain tile is accumulating in the yards of many factories, due partly to the fact, people cannot get laborers to install the tile.

"The drain tile industry is in a very bad state and we notice thruout the state of Indiana, there is a larger supply than demand for drain tile, and attribute this partly as above stated, to shortage in labor to put the tile into the ground.

"We have two ditching machines which we have been operating from four to five years and find them entirely practical and that people would rather have the work done by machine than by hand as the grade is truer, work better, and can be done and off hands quicker than by hand.

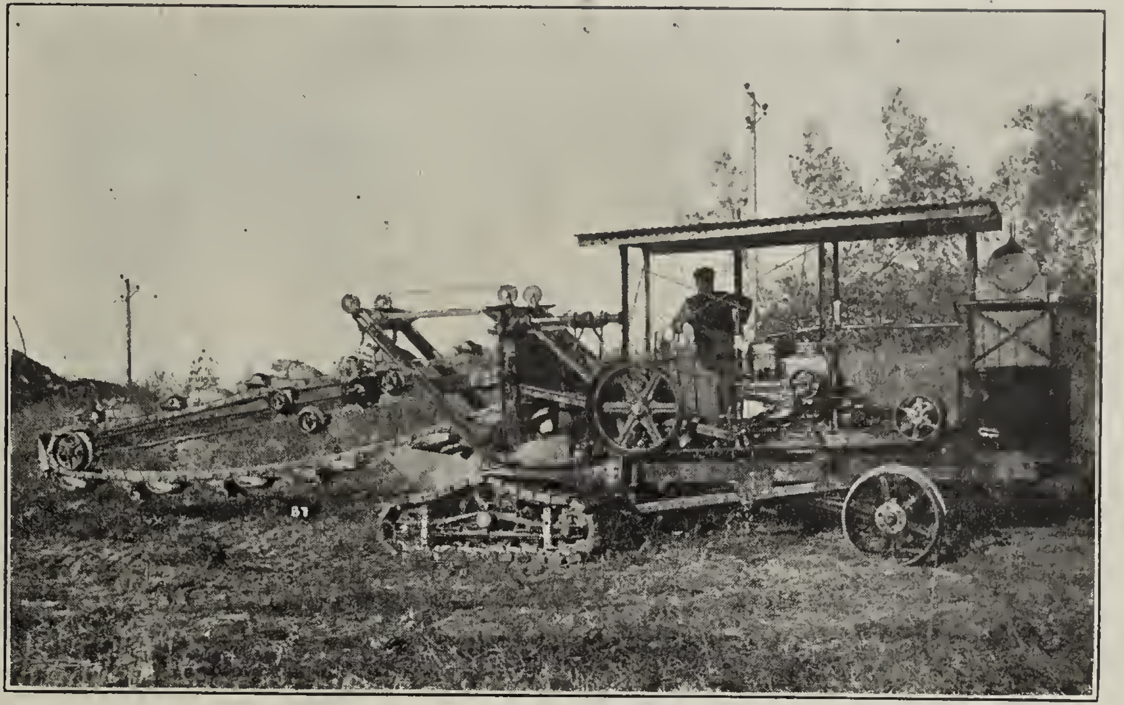
"We do not rent the machines to the farmers, but have one operator and one extra man to each machine and charge 1½ cents per inch deep per rod long, or, for a ditch average depth 36 inches charge 54 cents per rod, this for digging the trench and laying the tile but not covering or filling the trench.

Rapid Work and Straight Ditches True to Grade Are Strong Points in Favor of the Ditching Machine

"The average cost to us for operating these machines, by which we mean in labor, repairs and fuel, is one cent per inch per rod long, but this does not take into account the loss from depreciation or the interest on the investment.

"We find that the machine, as we operate it, does not materially lower the cost of ditching, but the trouble in our section is that people cannot get hand labor for this kind of work at this time, however, the price on labor has advanced so rapidly lately, presume the price by machine now will be cheaper than hand, altho in the past it was not quite so cheap.

"The machines we have do help us to sell many more tile than we would without them, and we find that hand ditchers do not hold it against us for operating the machines but rather co-operate with us rather than to show a desire to work opposition."



This View Shows Another Type of Mechanical Ditcher Which Is Very Popular in Some Districts

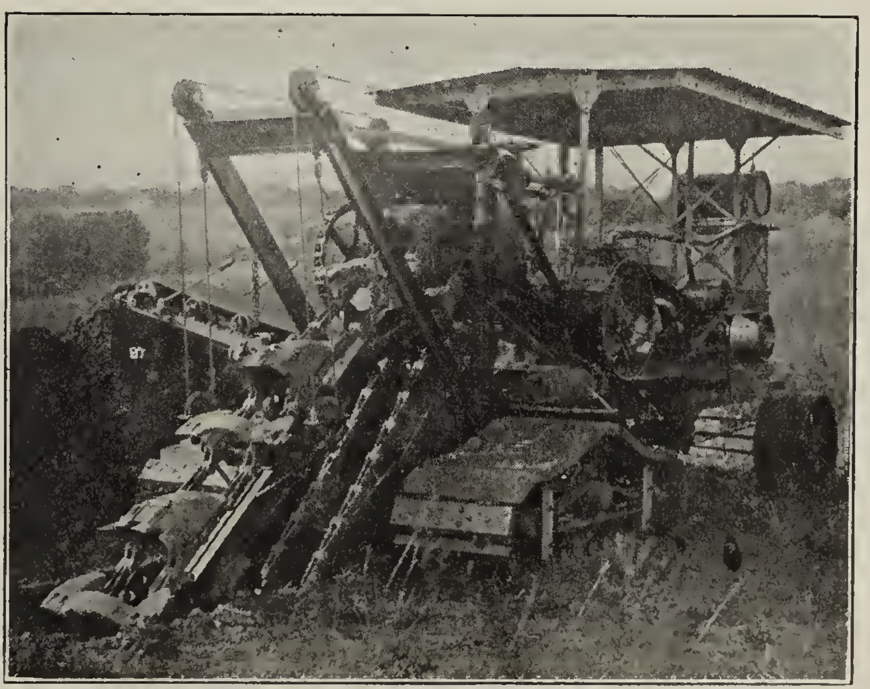
The fact that not one of the manufacturers using the traction ditcher failed to recommend it as a very great aid in selling their output, shows what an advantage it would be to those manufacturers in whose district there is a lack of them.

To emphasize the advantages to be gained by the manufacturer who will invest in and operate one of these traction excavators, we recapitulate the good points brought out in the letters of the owners of such a machine.

1. The work of digging the trenches is accomplished with much greater speed and dispatch, and the work is more accurate, which pleases the farmer.

2. In most cases the ditching can be done at a cost cheaper than where hand labor is employed.

3. The work of ditching is not so much at the mercy of weather conditions when a machine is used, since it can be employed in digging trenches in spring, summer or fall, or whenever the farmer has time, while spade digging can be done only in spring when the ground is still fairly soft.



Its Operation Is Not So Difficult But That a Man Can Learn It in a Very Short Time

4. Hauling and filling does not have a bad effect on the following crops.

5. Most important of all, the ditching machine helps sell and increases the sale of drain tile to a very large degree.

CLAY INDUSTRY HONOR ROLL

Following Is a Partial List of Names of Men Formerly Connected with the Clay Products Manufacturing Industry, but Who Are Now in the Service of "Uncle Sam"

Anderson, Frank—Muskogee (Okla.) Vitrified Brick Co.
Anderson, John—A. P. Green Fire Brick Co., Mexico, Mo.
Appleton, Harry—A. P. Green Fire Brick Co., Mexico, Mo.
Arnold, H. C.—Department of Ceramics. University of Illinois, Urbana, Ill.
Atherton, Carlisle—Drury Brick & Tile Co., Essex Junction, Vt.
Baker, E. B.—Fairmount, Ill.
Bates, C. E.—Department of Ceramics, University of Illinois, Urbana, Ill.
Berger, Andrew F.—A. C. Ochs Brick & Tile Co., Springfield, Minn.
Bonney, Marshall—A. P. Green Fire Brick Co., Mexico, Mo.
Bothwell, William A.—Eastern Clay Goods Co., Boston, Mass.
Brooks, Benjamin—W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Brown, Clarence—Eastern Clay Goods Co., Boston, Mass.
Brown, George—New Lexington, O.
Brown, J. W.—New Lexington, O.
Brown, James A.—Baltimore (Md.) Brick Co.
Brown, Sheldon—New Lexington, O.
Buntley, Thomas—Mercer Pottery Co., Trenton, N. J.
Byers, Harry F.—Ferro Brick Co., Watsontown, Pa.
Cerns, Roy—W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Chittenden, R. M.—Department of Ceramics, University of Illinois, Urbana, Ill.
Clink, Stuart—Barkwill-Farr Co., Cleveland, O.
Coleman, Joseph—Louisville (Ky.) Builders Supply Co.
Cook, W. A.—A. P. Green Fire Brick Co., Mexico, Mo.
Coon, Beuford—A. P. Green Fire Brick Co., Mexico, Mo.
Crangle, W. H.—Medal Paving Brick Co., Cleveland, O.
Crimmins, James—Eastern Clay Goods Co., Boston, Mass.
Cullen, Norman—Morton (Minn.) Clay Works.
Davies, Norman—Don Valley Brick Co., Toronto, Ont.
Davies, Wilfred—Don Valley Brick Co., Toronto, Ont.
Davis, John—Eastern Clay Goods Co., Boston, Mass.
Dean, Bruce—Muskogee (Okla.) Vitrified Brick Co.
Debo, Lonnie—A. P. Green Fire Brick Co., Mexico, Mo.

Dickey, Fred L.—W. S. Dickey Clay Mfg. Co., Kansas City, Mo.
Dorian, Harry—Plymouth Clay Products Co., Fort Dodge, Ia.
Drury, Harris K.—Drury Brick & Tile Co., Essex Junction, Vt.
Drury, Max W.—Drury Brick & Tile Co., Essex Junction, Vt.
Duckworth, P. A.—A. P. Green Fire Brick Co., Mexico, Mo.
Durrell, Royal S.—Sewer Pipe Manufacturers' Association, Akron, Ohio.
Earle, George C.—Hydraulic-Press Brick Co., Roseville, O.
Eliot, F. M.—Hydraulic-Press Brick Co., Washington, D. C.
Fackler, C. W.—Muskogee (Okla.) Vitrified Brick Co.
Fairleigh, A. H.—Louisville (Ky.) Builders' Supply Co.
Farr, E. W.—Barkwill-Farr Co., Cleveland, Ohio.
Fields, B. F.—Louisville (Ky.) Builders' Supply Co.
Filbert, Samuel W.—Filbert Brick Co., Baltimore, Md.
Figgins, Bernard—Hydraulic-Press Brick Co., Baltimore, Md.
Fisher, C. G.—A. P. Green Fire Brick Co., Mexico, Mo.
Fisher, R. Fenton—Jamestown (N. Y.) Shale Paving Brick Co.
Ford, Lawrence—A. P. Green Fire Brick Co., Mexico, Mo.
Fox, Norman B.—Ferro Brick Co., Watertown, Pa.
Francis, J. A.—Muskogee (Okla.) Vitrified Brick Co.
Fritz, D.—Muskogee (Okla.) Vitrified Brick Co.
Gerhardstein, V. H.—West Concord (Minn.) Brick & Tile Co.
Gibson, Allen—A. P. Green Fire Brick Co., Mexico, Mo.
Gilbert, Henry—Muskogee (Okla.) Vitrified Brick Co.
Gleeson, Joseph M.—Eastern Clay Goods Co., Boston, Mass.
Goodman, Leon—Des Moines (Iowa) Clay Co.
Graves, Ora—A. P. Green Fire Brick Co., Mexico, Mo.
Gregg, Frank A.—Broughton (Ill.) Brick & Tile Co.
Hartigan, Dave—A. P. Green Fire Brick Co., Mexico, Mo.
Herbert, Jack—Barkwill-Farr Co., Cleveland, Ohio.
Hermes, E. J.—Muskogee (Okla.) Vitrified Brick Co.
Hill, George—A. P. Green Fire Brick Co., Mexico, Mo.
Hoffman, H.—A. P. Green Fire Brick Co., Mexico, Mo.
Hults, Eugene A.—North Iowa Brick & Tile Co., Mason City, Ia.
Hutcherson, Joe E.—A. P. Green Fire Brick Co., Mexico, Mo.
Ittner, Ben F.—Belleville (Ill.) Brick & Tile Co.
Jones, Westley—Muskogee (Okla.) Vitrified Brick Co.
Kane, T. Robert—Michael Kane Brick Co., Hartford, Conn.
Kelley, Bill—A. P. Green Fire Brick Co., Mexico, Mo.
Kennedy, Joseph—Thomas Maddock's Sons Co., Trenton, N. J.
Keyes, Joe—Muskogee (Okla.) Vitrified Brick Co.
Kilbourne, R.—A. P. Green Fire Brick Co., Mexico, Mo.
King, Matt—Permanent Buildings Society, Des Moines, Iowa.
Kinsman, Leslie—Eastern Clay Goods Co., Boston, Mass.
Kling, John A.—Cleveland (Ohio) Builders' Supply Co.
Knowles, Luke—George Knowles, Trenton, N. J.
Lashley, Jess—A. P. Green Fire Brick Co., Mexico, Mo.
Leroe, Adolphus—Drury Brick & Tile Co., Essex Junction, Vt.
Macdonald, Wilfred—Eastern Clay Goods Co., Boston, Mass.
Maddock, Harold S.—Thomas Maddock's Sons Co., Trenton, N. J.
Mandigo, C. R.—Western Paving Brick Manufacturers' Assn., Kansas City, Mo.
Marks, Floyd—A. C. Ochs Brick & Tile Co., Springfield, Minn.
Marshall, Chapman W., son of C. A. Marshall, Cresco, Iowa.
Marshall, Harold B., son of C. A. Marshall, Cresco, Iowa.
McCann, James S.—Streator (Ill.) Clay Manufacturing Co.

McDonald, A.—A. P. Green Fire Brick Co., Mexico, Mo.

McHugh, W.—A. P. Green Fire Brick Co., Mexico, Mo.

McVay, T. N.—Streator (Ill.) Brick Co.

Messinger, William—Ferro Brick Co., Watsontown, Pa. (Died May 18, 1918.)

Minnick, V.—A. P. Green Fire Brick Co., Mexico, Mo.

Morey, Dan, Jr.—Morey Clay Products Co., Ottumwa, Ia.

Mullen, Bert R.—W. S. Dickey Clay Mfg. Co., Kansas City, Mo.

Nichols, E. J.—A. P. Green Fire Brick Co., Mexico, Mo.

Nolan, Ed.—A. P. Green Fire Brick Co., Mexico, Mo.

O'Connor, James F.—Hydraulic-Press Brick Co., Toledo, O.

Orton, Edward, Jr.—Ex-Secretary American Ceramic Society, Columbus, O.

Palmer, John M.—Eastern Clay Goods Co., Boston, Mass.

Patterson, Ralph—A. P. Green Fire Brick Co., Mexico, Mo.

Peterson, Harold—Eastern Clay Goods Co., Boston, Mass.

Plumb, E. F.—Streator (Ill.) Brick Co.

Platt, Allen S.—Van Meter, Iowa.

Post, M. P.—Post Brothers Tile Co., Commerce, Mo.

Powell, George—Muskogee (Okla.) Vitrified Brick Co.

Quiring, J. L.—A. C. Ochs Brick & Tile Co., Springfield, Minn.

Ramsey, Jack—A. P. Green Fire Brick Co., Mexico, Mo.

Rawlings, Howard E.—Onondaga Vitrified Brick Co., Syracuse, N. Y. (Died Nov. 15, 1917.)

Rhoades, James—Mercer Pottery Co., Trenton, N. J.

Roe, Leo—A. P. Green Fire Brick Co., Mexico, Mo.

Russell, Scott—Nicholson Clay Mfg. Co., Chicago, Ill.

Sallee, W. P.—Muskogee (Okla.) Vitrified Brick Co.

Schackelford, Joe—Muskogee (Okla.) Vitrified Brick Co.

Schneider, George W.—A. C. Ochs Brick & Tile Co., Springfield, Minn.

Shawnee, Henry—A. P. Green Fire Brick Co., Mexico, Mo.

Sheridan, Leo J.—Brick and Clay Record, Chicago, Ill.

Sladek, George E.—Department of Ceramics, University of Illinois, Urbana, Ill.

Smasal, Wm. F.—A. C. Ochs Brick & Tile Co., Springfield, Minn.

Smith, Charles—Delaware Pottery Co., Trenton, N. J.

Smith, Howard—Eastern Clay Goods Co., Boston, Mass.

Stophlet, Don—W. S. Dickey Clay Mfg. Co., Kansas City, Mo.

Sullivan, Thomas Francis—Eastern Clay Goods Co., Boston, Mass.

Taylor, Robert, Jr.—Hocking Valley Products Co., Columbus, O.

Taylor, W. M.—Muskogee (Okla.) Vitrified Brick Co.

Tendal, John Leslie—A. P. Green Fire Brick Co., Mexico, Mo.

Thomas, Eddie—A. P. Green Fire Brick Co., Mexico, Mo.

Toalten, Pete—A. P. Green Fire Brick Co., Mexico, Mo.

Townsley, O.—A. P. Green Fire Brick Co., Mexico, Mo.

Wagoner W.—Muskogee (Okla.) Vitrified Brick Co.

Walker, Walter—Mercer Pottery Co., Trenton, N. J.

Weiss, Ernest—A. C. Ochs Brick & Tile Co., Springfield, Minn.

White, John—A. P. Green Fire Brick Co., Mexico, Mo.

Whittler, Giles—A. P. Green Fire Brick Co., Mexico, Mo.

Wilkeson, Lester—Muskogee (Okla.) Vitrified Brick Co.

Williams, W. E.—Muskogee (Okla.) Vitrified Brick Co.

Wilson, R. P.—Cameron (Pa.) Clay Products Co.

Wright, Walter—A. P. Green Fire Brick Co., Mexico, Mo.

A list of names of men who are represented by stars on the service flags hanging in the offices of manufacturers of clayworking machinery and equipment is given on page 1067.

RELEASING WHEELERS *for* MORE PRODUCTIVE WORK

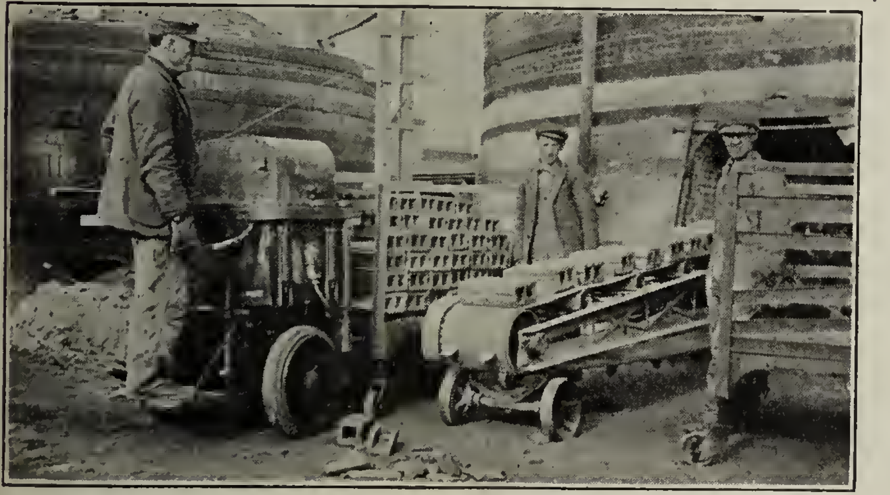
How to Save Man Power is Becoming an Increasingly More Important Problem on Clay Plants. This Article Gives a Solution to the Difficulty in One Phase of the Industry

ONE OF THE BIGGEST PROBLEMS confronting the clay products manufacturer at the present time is the shortage of man-power, and when it is taken into consideration that at any time a type of labor difficult to find for the clay plant is that of a good trucker or wheeler, there being but few even fair wheelers available, it becomes necessary for clay plant managers to find a way out of their troubles by the adoption of mechanical means for the moving of their clay products.

Some clay plants are solving this particular problem thru the use of small electric industrial trucks, of which there are several good makes on the market, all operated on practically the same principle. The design is such that the operator need not have more than mediocre intelligence. In fact, these trucks are so simple to operate that one superintendent who had never seen an electric truck before went to the freight depot in his town, got his truck and inside of two minutes was running it on its way to the clay plant a mile distant.

DESCRIPTION OF TRUCK DESIGN

The principle of design is the same as in the large electric trucks used on the streets by many firms in the larger cities. The trucks have electric motors supplied with current from storage batteries. The driving mechanism is so arranged that if the operator steps from his place or leaves his seat, the brakes are automatically applied and the machine stops. The speed is controlled so that the machine cannot be driven beyond a certain predetermined rate. Steering is done by one hand while the other hand is on the driving lever. If the driver moves his hand from the driving lever it immediately returns to neutral and the brakes are applied.



This View Taken at the Plant of the Adel (Iowa) Clay Products Co., Shows the System Used in Loading the Platforms Which are Distributed to the Stock Piles by an Electric Truck.

The current cannot be turned on fast enough to damage either the batteries or the motor. All lubrication is accessible and the batteries can be charged without removing them from the machine. At one clay plant the batteries are charged for seven hours each night. This amount of storage energy then serves to operate the truck all day. If the machine is to be operated continuously, the batteries can be removed and charged batteries substituted in the battery box and connected up in less than five minutes. The time depends largely upon the apparatus available for handling the batteries and the amount of help at hand. Usually two men, with a small crane, can disconnect a discharged battery, remove it, put a charged battery in place and connect it up in about four minutes.

This is the Combination That Prevented a Complete Shut-Down on the Yingling-Martin Brick Co.'s Plant at Johnsonburg, Pa., Last Fall. The Man Operating This Truck is an Italian.

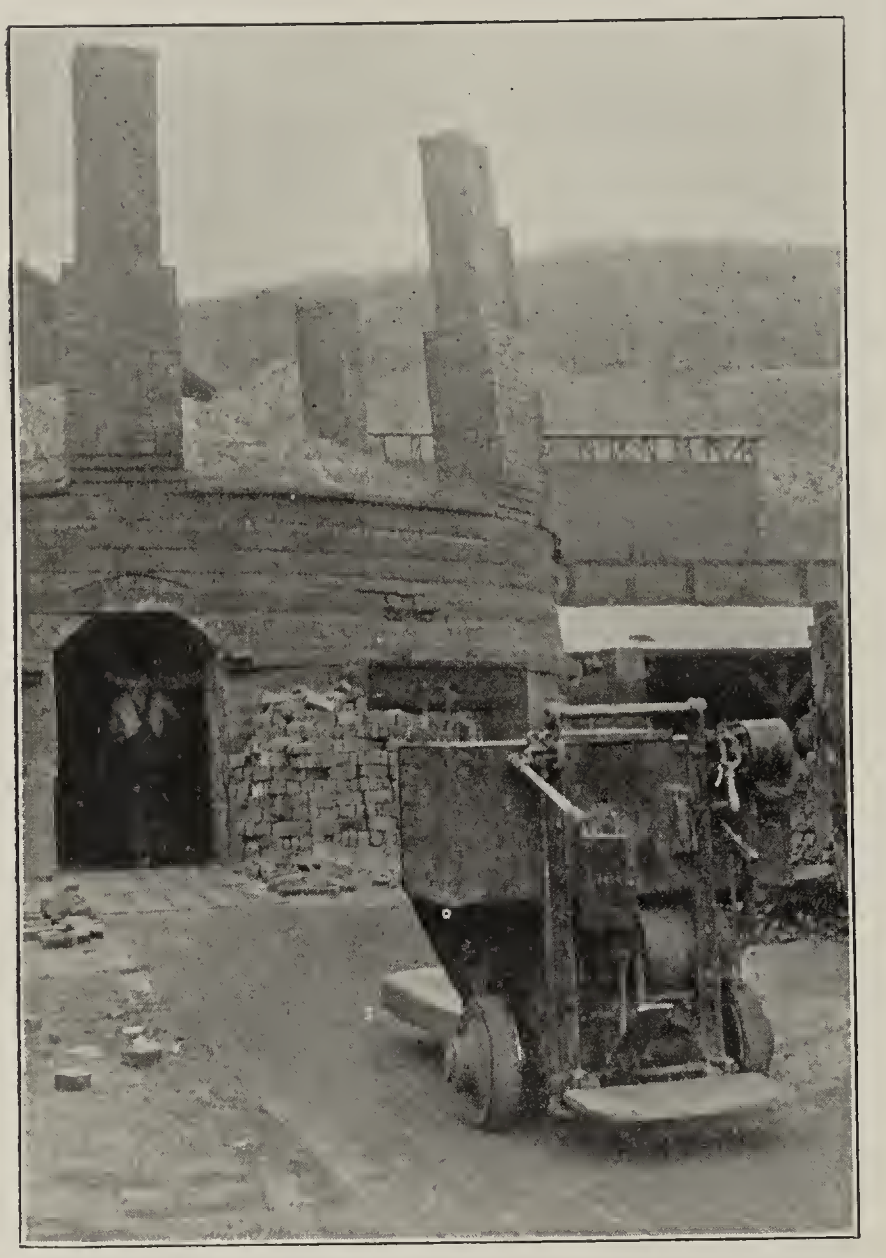
An important consideration in the use of electric trucks is the condition of the runways. Many brick yards are poorly paved, so that this condition would make them unfit for the use of an electric truck. However, this can be easily remedied at but a small cost to the manufacturer. The Yingling-Martin Brick Co., at Johnsonburg, Pa., found it to their advantage to construct a runway thru the yard by laying an inch thickness of cement over the brick pavement at the places where the runway was most needed. The cost of the work amounted to $1,000, but it was found to be a good investment. One clay plant uses a portable track formed by planks held in position by cross pieces. The distance the planks are set apart is equal to the gauge of the wheels of the truck. These are cheaply constructed and easily transferred to points where most needed.

METHOD OF OPERATING TRUCK

Iron sheets are used inside of the kiln on the floor where the truck travels. These prove very satisfactory and prevent the wear and tear on the kiln floor.

Where brick is the product to be trucked out from the kilns to the stock pile or freight car, they are usually piled on a platform set in the kiln by three or four men. Usually 500 brick are set on a platform. While one or two platforms are being loaded, the truck is carrying one away to the point of unloading and returning with an empty one. To cart a platform away, the truck simply runs its lifting platform underneath the loaded platform, and by a certain mechanism the platform of the truck rises and lifts the loaded platform off the ground in a position which makes it easy to be transported to the desired place.

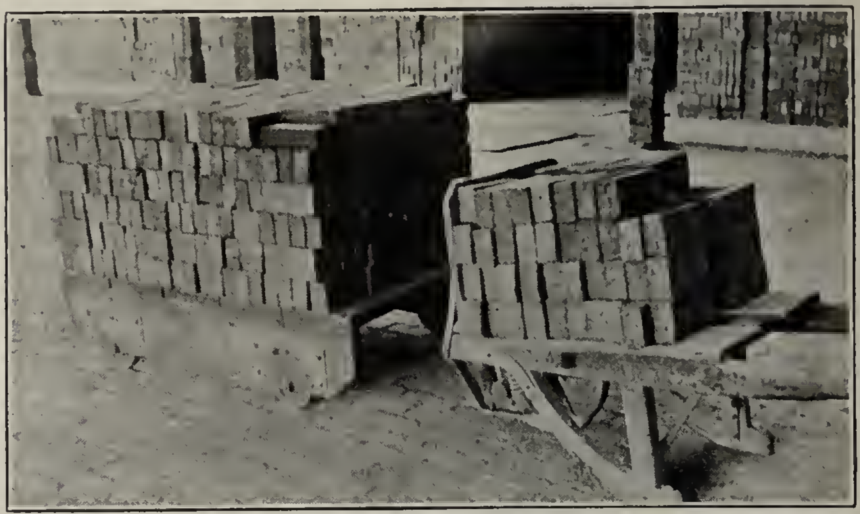
Last fall the Yingling-Martin Brick Co. was enabled to operate to forty per cent. capacity thru the use of an automatic transportation truck, whereas without this they would have been forced to close down because of the labor shortage. This plant has thirteen kilns and a capacity of 1,600,000 brick a month. The truck takes the place of four men at this plant.



An End View of the Industrial Electric Truck is Shown Here. It Is Not Nearly So Complicated as It Looks. Notice the Cement Runway Which Was Laid Over the Brick Paved Yard.

Another truck with a good record is used at the Ridgway (Pa.) Brick Co. The men at this plant were at first very hostile toward this device, but later realized its great help in reducing the amount of physical labor required in setting and loading, so that at present these same men would not be without the electric truck. This labor saver handles 72,000 brick in nine hours and it has a possibility of taking care of fully 100,000 brick a day, according to the manager of the plant. The truck gives a saving of three men. The cost of recharging the storage battery amounts to but twenty-eight cents.

The Adel (Iowa) Clay Products Co. uses electric trucks and finds them them very adaptable to the handling of drain tile and hollow building tile. The stocking of these products can be done with much greater efficiency because of the large amount of work handled by the truck and its much greater range of operation.



The Comparative Loads of the Wheelbarrow and Industrial Truck is Well Pictured in the Above View. The Ratio is 76 to 500 in Favor of the Mechanical Carrier Which Is Also Much More Rapid and Labor-Saving.

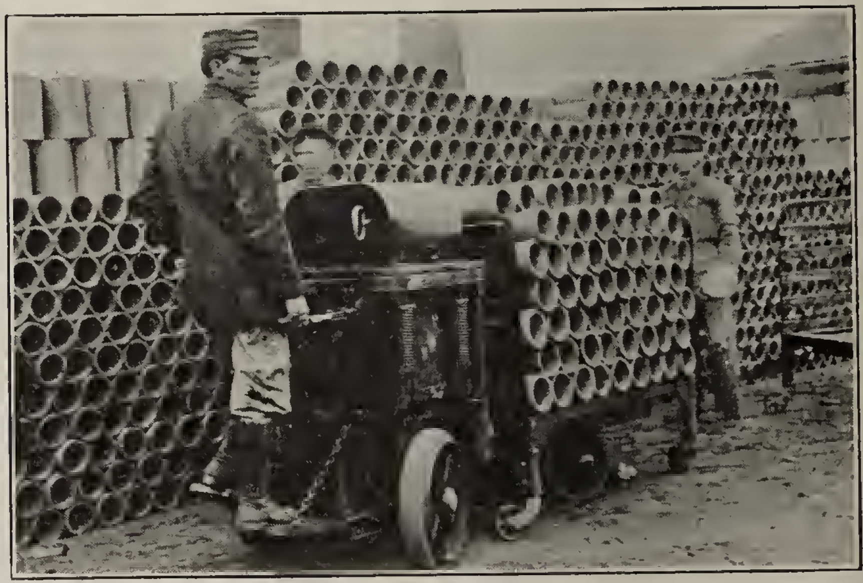
In general the cost of operation depends on so many conditions that those obtained in any one plant would not hold in a similar one just a short distance away. An average of a large number of installations, including those of other industries, places the cost of daily operation for a ten-hour day at close to $1.20, adding interest, depreciation and upkeep. It may run higher, or it may be materially lower.

Much of the operation cost depends on the work being done, the conditions of the runways, and the time the truck is actually at work; that is, moving material. All time lost waiting for a load or waiting to be unloaded is lost time, during which interest and depreciation are mounting up, and these are two of the heavy charges.

* * *

Cuban Market for Brick Machinery

Vice-Consul Paul L. Clugston reports that a market for modern brick machinery could easily be developed in Matanzas, Cuba, where most of the buildings are made of brick. American manufacturers would find no foreign competition in this district.



The Large Carriages Which Hold the Tile Shown Above Are Very Conveniently Loaded and Carried to the Stock Pile. The Rollers on the Carriages Enable Them to Be Moved About Very Readily.

A WORTH-WHILE SYSTEM
of TIME KEEPING

A Detailed Description of a Simple and Effective System of Keeping Time on a Clay Plant. This Method is in Daily Use and Meets with the Approval of the Men on the Plant

By H. L. Gormont

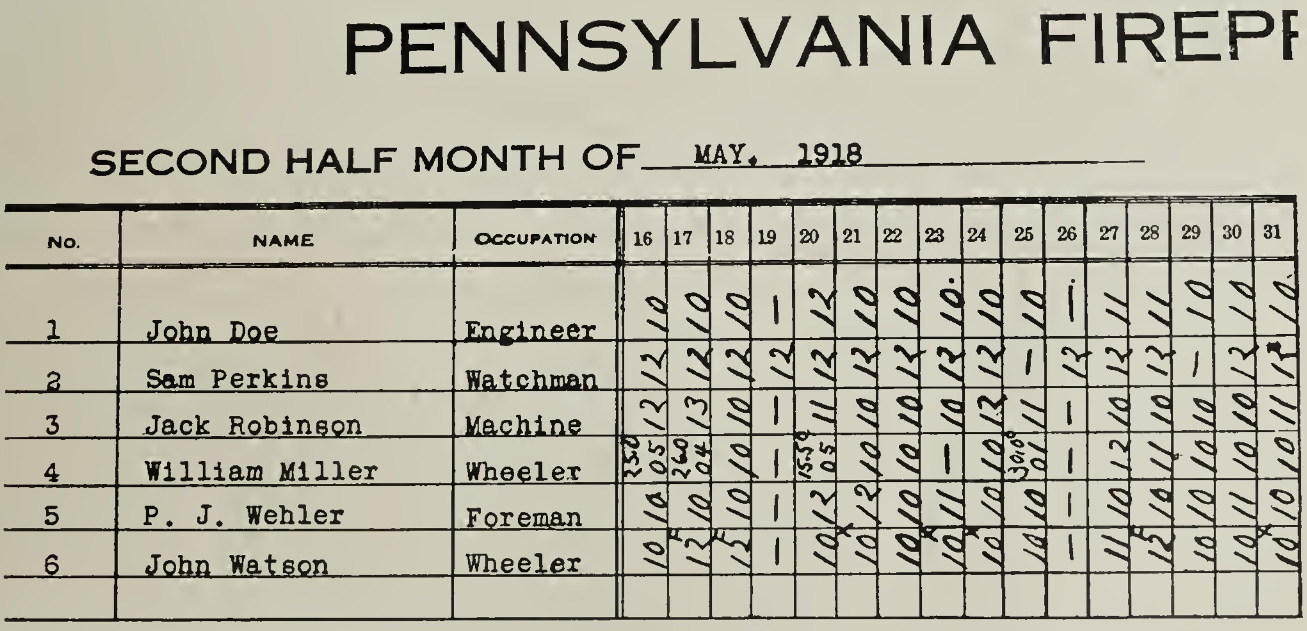
Time Clerk, Pennsylvania Fireproofing Co., St. Marys, Pa.

WHAT IS THE BEST SYSTEM of keeping time where time clocks are not used, is a question that has been asked me a number of times, and while I do not mean to infer that the system used at our plant is the best and cannot be improved, I do say that it is very good and very simple and that by its use we have saved considerable trouble and some money.

Time clocks at a clay plant, in my estimation, are not as successful as they might be or as successful as they are in other industries, due largely to the space covered by the operation and the different departments, especially at our plant. The most severe drawback to time clocks at a clay plant is that employes do not favor walking away from home to punch the clock at quitting time, instead of walking toward home, and this is very true of the men who are working in the yard and where the territory covered by the yard is any way large and the clock located at the entrance to the factory.

SIMPLE AND APPROVED SYSTEM

The system we have in operation is very simple and finds hearty favor with the employes. We have the payroll sheets, size 14½x18 inches, for the first half of the month the dates being from the first to fifteenth, and the second half with dates from the sixteenth to thirty-first. They are long enough, after space has been utilized for the proper headings, to accommodate fifty-five names. The headings, beginning at the left of the sheet, are as follows: Number; name; occupation; dates; total time, rate, gross earnings, blank column; four columns for deductions; total deductions; net earnings and another blank column.



PENNSYLVANIA FIREPI

SECOND HALF MONTH OF MAY, 1918

NO.	NAME	OCCUPATION	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	John Doe	Engineer	10	10	10	|	12	10	10	10	10	10	|	11	11	10	10	10
2	Sam Perkins	Watchman	12	12	12	12	12	12	12	12	12	|	12	12	12	|	12	12
3	Jack Robinson	Machine	12	13	10	|	11	10	10	10	12	11	|	10	10	10	10	11
4	William Miller	Wheeler	25.0 05	26.0 04	10	|	15.59 05	10	10	|	10	30.00 01	|	12	11	10	10	10
5	P. J. Wehler	Foreman	10	10	10	|	12	12	10	11	10	10	|	10	10	10	11	10
6	John Watson	Wheeler	10	F 12	F 15	|	10	x 10	10	x 10	x 10	10	|	11	F 12	10	10	x 10

This Illustrates How the Sheet Appears Fastened on the Board for Exposing Time of Employes. Note the Different Distinguishing Marks, Each One Telling Its Own Story.

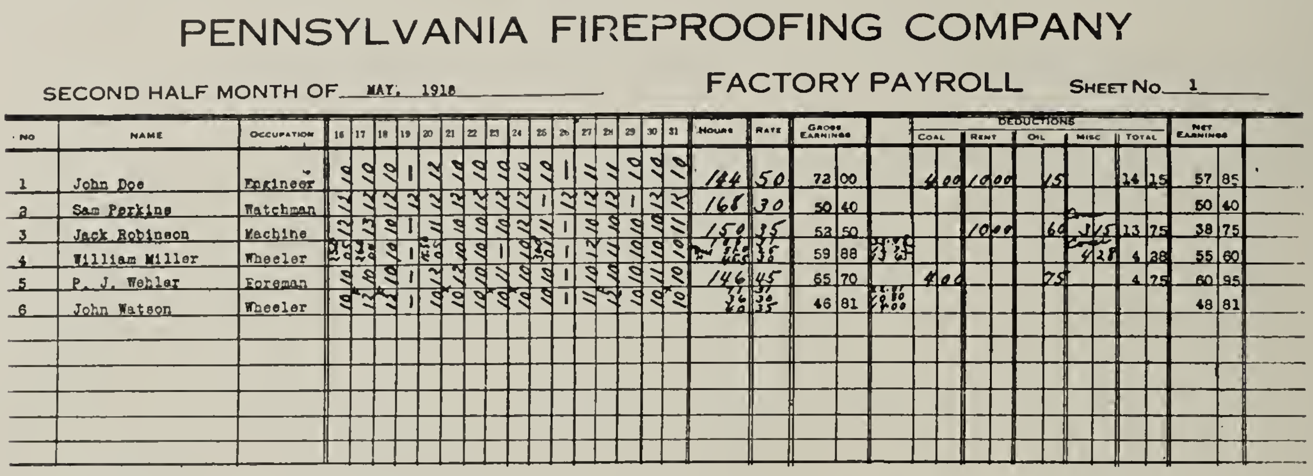
At the beginning of a day we typewrite the number and name of each employe in the spaces provided, then the sheets are folded lengthwise at the line dividing the last date and total time column. The sheets are fastened on a board which is large enough to hold four of them. In one of the windows in the time office a case has been provided, with a hinged door and lock, into which the board is placed so that the employes can see the time they work each day, and I want to state right here that this is the most important feature of the system, a feature that saves a lot of trouble and time on pay day, for if a mistake has been made in the time of an employe it is right on the board for him to see, and he at once reports the matter to the time clerk, who in turn takes it up with the proper foreman, and if an error has been made the correction is made immediately, thus doing away with those annoying pay-day adjustments.

EMPLOYE HIS OWN TIMEKEEPER

At our plant the men do not work on a straight hour basis. An employe may start his day working by the hour, changing after several hours to wheeling by the ton at a certain rate per ton, only to change later to another rate per ton, as we do not pay the same rate for handling all the different units of tile. Other employes are working on contract, receiving so many hours for so many tons; thus it can readily be seen that an error could creep in despite all caution. However, by exposing the sheets the employe virtually becomes his own timekeeper. What if an employe is given more time than he worked? Does he report that error? That question has been asked me and here is the answer: To any time clerk who has used this system it is a well-known fact that ninety-five per cent. of employes are jealous of each other, and when one man sees a fellow workman has more time on the sheet than he has, he will in almost every case report same to the time clerk, provided, of course, that both men were working at the same duties. This might be a broad statement, but just put this system into operation and see how quickly it will prove itself. I have made intentional errors to secure the proof.

RECORD EASILY READ

Another reason for exposing the time is that some of the employes change duties on some occasion for a few days where the rate of pay is higher than their regular work. When such is the case we distinguish that particular time by a mark, each mark having its meaning, which is shown to all our employes, and in case they do not receive the proper mark on the sheet they will at once report same and have the matter adjusted. The time clerk can devise his own system of distinguishing marks. A glance at the illustrations will show how we use same. For example: No. 6, John Watson, is a wheeler and receives 31 cents per hour; the time he was engaged at that work has no marks. On three days he fired kilns, those days being marked with an F, and for this work he received 30 cents per hour. On four days he was employed in the factory on machines, this time being distinguished by an X, receiving 35 cents per hour for this work. The rates of pay used in this article are used for examples only and are not the rates paid by this company. Wheeling tile by the ton where more than one rate of pay is in force, can be distinguished by marks, as is shown by No. 4 in the illustration.



PENNSYLVANIA FIREPROOFING COMPANY

SECOND HALF MONTH OF MAY, 1918 FACTORY PAYROLL SHEET NO. 1

NO	NAME	OCCUPATION	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	HOURS	RATE	GROSS EARNINGS		DEDUCTIONS					NET EARNINGS	
																							COAL	RENT	OIL	MISC	TOTAL		
1	John Doe	Engineer	10	10	10	1	12	10	10	10	10	10	1	11	11	10	10	10	144	50	72 00		4 00	10 00	15		14 15	57 85	
2	Sam Perkins	Watchman	12	12	12	12	12	12	12	12	12	1	12	12	12	1	12	12	168	30	50 40							50 40	
3	Jack Robinson	Machine	12	13	10	1	11	10	10	10	12	11	1	10	10	10	10	11	150	35	52 50			10 00	60	3 15	13 75	38 75	
4	William Miller	Wheeler	[illegible]	[illegible]	10	1	[illegible]	10	10	1	10	[illegible]	1	12	11	10	10	10	[illegible]	[illegible]	59 88	[illegible]				4 28	4 38	55 60	
5	P. J. Wehler	Foreman	10	10	10	1	12	12	10	11	10	10	1	10	10	10	11	10	146	45	65 70		4 00		75		4 75	60 95	
6	John Watson	Wheeler	10	12	13	1	10	10	10	10	10	10	1	11	13	10	10	10	71 36 40	31 30 35	46 81	22.01 10.80 14.00						48 81	

This Illustration Shows How the Payroll Sheets Appear When the Payroll Is Made Up. Note How the Entire Transaction of Every Employe is Plainly in Sight Without Reverting Back to a Set of Books.

Each of our foremen are provided with a time book containing the names of the men under their authority. They keep the time of their men, turning their books over to the time clerk every morning, and he "marks" the time on the sheets. It is also the duty of the time clerk to make at least one round about the operation and ascertain who is working, so he can check up against the foreman's books.

HOW THE PAYROLL IS MADE UP

The payroll sheets are not removed from the board until the day following the close of the pay, or until the new sheets are to be placed in position. After being removed from the board the sheets are then ready to proceed to make up the payroll, which is done as in any other system, getting the total time worked and the gross earnings, getting the deductions under their proper headings and adding the deductions the total of which is placed in its column and deducted from the gross earnings, which gives the net earnings. In balancing up the sheets the total of the total deduction column and net earning column added must equal the gross earning column. The feature of having deductions appear itemized on the sheets is that if it is desired later to look up any employe for any particular pay the entire transaction is in front of you without seeking thru a set of books.

As I mentioned at the beginning of this article, I do not wish to go on record as saying that this is the best system, but I will go on record as saying that there is no system that will save more time and pay-day adjustments than this.

⁂

Market for Brick Machinery in Bordeaux

Thru reports issued by the United States Department of Commerce, we learn that brickmaking and clay-molding machinery, altho not entirely of the advanced types found in the factories of the United States, have a widespread use in the Bordeaux consular district, owing to the fact that building construction in this region is largely made from the deposits of materials abounding in the Department of the Landes and other departments of Southwestern France. While there is probably more timber available in this section than in other parts of France the construction of frame buildings is extremely limited, even these being almost exclusively furnished with roofs and foundations of clay products. Considering the general use thruout France of clay construction materials there is unquestionably a market for machinery to manufacture the different articles.

ROOFS AND INTERIOR WALLS OF TILE AND BRICK

Most of the residence and business buildings in Bordeaux and the larger cities of this district are built of soft limestone and sandstone, only the roofs and the interior walls of the houses being made of clay products. For these interior uses a large flat brick measuring approximately 9 by 5 by 1 inches (frequently made 3 inches thick instead of 1, but with two spaces lengthwise) is most frequently employed. A special type of machine is needed for this work, which, considering that these brick are used so generally for wall construction in this country, it would be desirable for exporters to have in stock. The tile for the roofs, almost universally of clay, are either of a single arch or of one or two undulations, in size most commonly 10 by 5 by ¾ inch. These tile are very similar to those used on certain buildings in the United States, but they are made with a catch or fastener on the underside thru which can be threaded the wire for binding them to the rafters. American machinery for making these tile would probably be serviceable without great alteration and should find wide sale.

Builders' blocks for exterior construction purposes are to be found mainly in use for making country residences and seaside and resort buildings, but are used very little for business houses in this country. The clays obtained in the Department of the Landes for the manufacture of tile and brick are abundant, slightly sandy, the lemon yellow of diluvian origin being especially valuable. Certain marls, if not too lime-bearing, are also utilized for making fancy dwelling-house brick.

Tile and brick manufacturing plants are numerous in this district, particularly in the Department of the Landes, where there were last year about 200 of them, operated by hand labor largely and not as progressive as similar establishments in the United States. The more important plants in that department are those near the town of Laluque, in the neighborhood of the lignite mines, and also at Parentis, on Lake Cazeaux. Their output is entirely sufficient to meet the needs of that department and also to furnish some to the construction of the departments of Lotet-Garonne and the Gironde. In addition to these plants, there are smaller and less important ones in other parts of the district.

MANUFACTURE OF SILICO-CALCAIRE BRICK

The manufacture of artificial silico-calcaire stone by the mixture of lime and silica was an important feature of the clay products industry undertaken at Parentis, in the Department of the Landes, several years ago, where it is now established firmly. The plant manufacturing this article has placed in the market a product more successful and useful than the ordinary clay product. The machinery installed in 1910 was entirely of German make, as has been most of the machinery and equipment found in the plants of France at this time. The products manufactured were all shades of silico-calcaire brick, tile of various styles, and resin pots.

The very fine sand obtained at the quarries of Argengosse, from where it is also sent to Bordeaux and Angoulême for pottery manufacture, is mixed by steam pressure at this plant with the clays found in the vicinity of Lake Cazeaux and the lignite mines of Laluque. At the Parentis plant, with 15 men working, the daily output was 9,500 brick 5 by 10 inches per day, besides quantities of tile and heavy block of the artificial stone. Brick factory laborers received $1.58 per day in 1917, a 14 per cent. increase over pre-war wages. The decreased demand for the products has to a certain extent offset the decreased supply of labor available since the war.

Silico-calcaire brick have the particularly desirable qualities of durability, great homogeneity, resistance against cracking or breaking, feeble absorption, and rapid drying power, and insensibility to weather changes, especially the freezes. They resemble greatly the vitrified brick used in the United States, and no doubt can be made in the same manner and with the same equipment. These resist fire even better than the ordinary clay brick and will continue to increase in favor and demand.

FUEL BRIQUETS IN GENERAL USE

In southwestern France, as in all of this country, there is a general use for industrial purposes of brick or briquets of special machinery, power operated. The brick are made about 4 by 8 by 2 inches in size, with rounded corners and usually with two perforations in each brick, as are frequently found in American building brick of clay. Practically the same kind of machinery could be employed for this purpose as for the clay brick.

MARKET FOR BRICK MACHINERY AFTER WAR

As for the possibility of a market for machinery in France after the war, it may be said that this region will not be greatly affected by the reconstruction work in the invaded districts of the north of France, altho it will probably be called upon to furnish about the normal pre-war amount of building material, and probably more timber than heretofore. According to reports about the work already under way in this line, it is understood that the buildings in the devastated regions will be frame structures, with clay-tile roofs and brick or stone foundations; that is what the sample exhibition houses shown at Bordeaux indicate. There will be little additional construction work in that region to be done after the war.

According to the French tariff, general machinery, under which heading brick machinery apparently would be classified, is dutiable at $1.31 per 100 pounds net weight.

To enter this market, manufacturers should send their representatives to France to visit the more important manufacturing centers and the leading houses before the end of the war. Just now there is little to do in this line, and some difficulty would be met in making sales. Manufacturers intending to export should neither go into the matter too heavily now nor wait until after the war when other foreign exporters have taken the best of the trade. The manufacture of clay products is so widespread that the efforts of an exporting house for machinery should not be confined to any one particular locality of France nor to correspondence with manufacturers in that section alone. One will find the market for brick machinery more or less general all over France, so the best method of sale would probably be thru traveling salesmen acquainted with local conditions and language, who can visit the clay product manufacturers and there demonstrate that their lines are as good if not better than the German makes in use. In other lines of machinery, as represented in Bordeaux and other cities of importance, exporters (English and American, as well as the now enemy peoples) have found it much to their advantage, when introducing new types, to have a depot of their stock where demonstrations can be readily made and from which orders can be promptly filled.

For the use of American brick machinery manufacturers who may be interested in entering this market, there is transmitted a list of the more important uses of brick machinery, as well as the names of leading dealers of all kinds of machinery, who might be found desirable representatives. Copies of this list may be obtained from the Bureau of Foreign and Domestic Commerce or its district and co-operative offices by referring to file No. 99515.

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Fine Clay in Colorado Rockies

That the eastern fronts of the Colorado Rockies are blanketed with as fine clay as can be found anywhere in the world and that Coloradans should take immediate steps to open up a local clay industry that should prove beneficial to the state as well as to the country, now sorely in need of commercial clays, is the gist of an announcement made by M. D. McEniry, division chief of the federal general land office at Denver.

Thru an official communication Mr. McEniry has been informed that this country imported over 250,000 tons of clay last year, while millions of tons of the valuable product lie unmined in Colorado. The clay is used in porcelain, pottery and other manufactured articles. Hundreds of tons of shipping could be saved for other purposes by the development of the Colorado fields, according to federal experts.

While most of the clay deposits are near Denver, it is said, there are also vast beds scattered thruout the state. Owners of such deposits and Coloradans in general interested in the clay industry can ascertain present market conditions, according to Mr. McEniry, by writing to the shipping board committee on mineral imports and exports, care of the Federal Geological Survey, Washington, D. C.

⁂

Two hundred bricklayers went on strike in Toronto on May 1. Their demand was for a wage increase of seventy cents, and weekly pay. Some of the employers granted the increase and their men continued to work.

BRICK FRONTIER BARRIER *the* LARGEST *on* EARTH

This Great Wall, Built Thousands of Years Ago in Ancient China, is Between Fifteen and Sixteen Hundred Miles Long and from Twenty to Thirty Feet High. It Was Erected as a Preparedness Measure When There Were No Airplanes to Drop Bombs in a Peaceful Community

By Monroe Woolley

A FELLOW NAMED CHI HWANTI, who reigned in the ancient ages as the first emperor of the Tsin dynasty in China ought to have been dubbed the "Biggest Brick Wall Builder" of his time, for Chi planned and built the most wonderful wall of brick the world has ever known. What is more, he had no modern factories, labor-saving devices, steam shovels, or kilns to help him in his stupendous undertaking—nothing save the bare hands of his people, a small assortment of medieval tools, plenty of clay and earth, and a dogged determination—mostly the latter.

The Wall in Places in the Mountains Is Built Over and Around Solid Rock Formations; Watch Towers Stand at Regular Intervals.

In magnitude and grandeur the pyramids of Egypt have nothing on this serpentine frontier barrier of baked earth and mortar which winds its way for some sixteen hundred miles over valley, plain and mountain range in northern China. The amount of brick in this immense undertaking would build several pyramids, and King Solomon could have made his temple somewhat larger than it is reputed to have been had he a source of building material such as the Chinese constructor had in old mother earth when he pluckily undertook the building of mankind's largest "fence."

As we are striving to stifle and drive out the Huns today, so did Emperor Chi Hwanti have his own troubles in subduing and keeping the Huns from over-running his domain in the dim and distant pass. There were a few short walls blocking the mountain passes on the northern frontier of China when Chi took his kingly seat as ruler. He at once realized that to effectually suppress foreign invasion from a relentless foe that these short sections of wall must be linked up together and made one long, solid wall. Hence, acting on his reasoning, he may be called the actual builder of the wonderful wall which has stood all these centuries to awe travelers from other lands with its immensity, and to elicit the admiration of engineers, brick masons and brickmakers from everywhere.

A BRICK MONUMENT THOUSANDS OF YEARS OLD

It took ten years to complete the wall. Some idea of its size and length may be had from this fact. But the marvel of it is that a work of such magnitude could be accomplished in this period of time, considering the means available for the building. It took our own engineers and workmen something near this same length of time, notwithstanding that they had modern tools and mechanism of all sorts—super-machines of a kind which would have scared an ancient Chinese into conniption fits—to build the Panama-canal.

The great wall was completed 204 B. C., and the thoroness of the work and the quality of the fabricated material used in construction is demonstrated in the fact that the giant wall still stands, not hundreds, but thousands of years old, a monument to past pluck and perseverance. It is true that the wall is crumbling in places but most anything built by human hands is bound sooner or later to decay if not repaired from time to time. Absolutely

Running In and Out Thru Mountain Passes and Over Hills, the Ever Changing Contour of This Great Wall Is a Marvel to All Sightseers.

no care is given China's ancient wonder, either by the people or the government. The fact is, the people, the offspring of the wall's builders, who are said to worship their ancestors, but evidently not the works of their forefathers, are the greatest enemies of the wall. They do not hesitate to help themselves from the supply the wall furnishes whenever they have occasion to use a few brick.

An American dentist who once visited the wall particularly noted the brick falling out of place where the mortar had loosened at frequent intervals. "They look like sound teeth which have fallen out of decayed gums," he aptly remarked to his companion. In other words, the brickmakers seem to have been better artisans than their fellow workers, the mortar mixers. But maybe it was not so much the fault of the mortar mixers as it was with materials and inventive genius. They had then no cement or plaster of the kind we know now, and patent brick-ties were not yet on the market.

The entire family of the Emperor Hwanti was exterminated before the wall, at a vast expense of labor and material, was finally completed. Whether it was the Hunnish hordes, or Tartars—the terms seem synonymous—that eventually accomplished the venerable wall-builder's end is not recorded in history. Anyway, this point does not much matter. It is enough to know that the invaders and their invasion are long since forgotten. China still lives as a nation, and the wall itself stands today one of the few material things on earth to remind man of the accomplishments of generations which passed out and beyond long before Christ came.

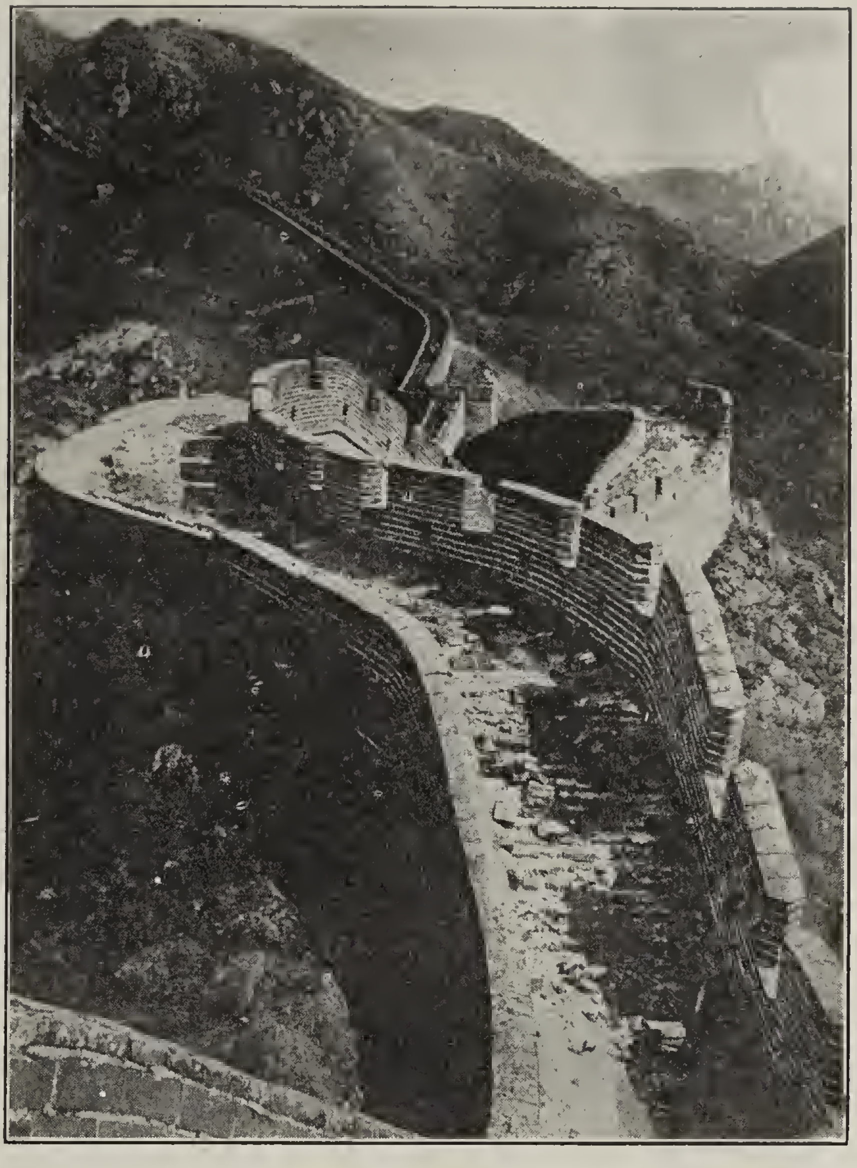
DESCRIPTION OF WALL

The wall runs through Chichi, Shansi, Shensi and Kansad provinces, if this information does not tax your linguistic patience. Authorities differ on the length of the structure due to its innumerable curves and angles, but it is somewhere between fifteen and sixteen hundred miles long. This immense brick barrier would reach across many of our states, and would almost reach the full length of either of our coasts.

The great wall starts at a point on the Gulf of Lioatung, and goes generally eastward past Peking. It does not run in a straight line for any distance worth mentioning. Rather it follows the form of a huge snake in the act of crawling. It guards mountain passes leading to Mongolia, and has inner and outer walls in numerous places, thus forming double walls. The wall ends west of Suchow, but there is a branch wall, a sort of spur, built to protect the Tibetan frontier.

There Is a Vast Amount of Road-Building Material Tied Up in This Wall and with a Rock Crusher, Some Good Roads Could Be Extracted From It. Also, the Top of the Way Would Make a Good Auto Speedway, Altho It Would Take a Good Car to Negotiate the "Hills" on High.

The height of the work is from twenty to thirty feet, sometimes more, sometimes less. In places especially favorable for an attack from an enemy, at intervals of about 200 feet, are a series of watch towers some forty or fifty feet high. The top surface of the wall is approximately twelve feet wide, while the base varies from fifteen to twenty-five feet in thickness. As an evidence of the mountainous country this vast masonry serpent creeps over, it may be said that the wall in some localities is more than 4,000 feet above sea level. Most of the foundation on which the brick walls rest is of granite and the walls inclose great masses of rock and earth, used as a filler.



The Wall Crawls Over the Ranges Like a Huge Snake. Note the Brick Fallen From the Wall Lying Loose on Wall Tops.

That portion of the wall butting on the sea at the Gulf of Lioa-tung and those portions located in the valleys where the population is thicker are largely destroyed, and, in fact, have the appearance of ancient ruins. Only the longer sections in the remote mountain regions remain intact, or practically so, and promise to so remain for ages yet to come. The brick in the densely populated places are constantly dug out and carried off for domestic uses by natives, who do not understand the need for preserving this most wonderful specimen of building in brick. The number of houses, ramshackle stables, and other outhouses that have been constructed out of the old wall by thieving hands in centuries gone by will run into the many thousands.

BRICK FOR PREPAREDNESS

As the great wall was built as a preparedness measure when there were no airplanes to fly over them dropping bombs, fate may yet decree, when permanent world peace comes thru the war we are now waging against the same enemy that annoyed ancient China, that the vast amount of material it contains may be put to other uses. Just think of how many houses, even how many towns, still are contained in this wonderful old wall—and houses of brick—the material that has withstood the weather and other destructive agents for thousands of years.

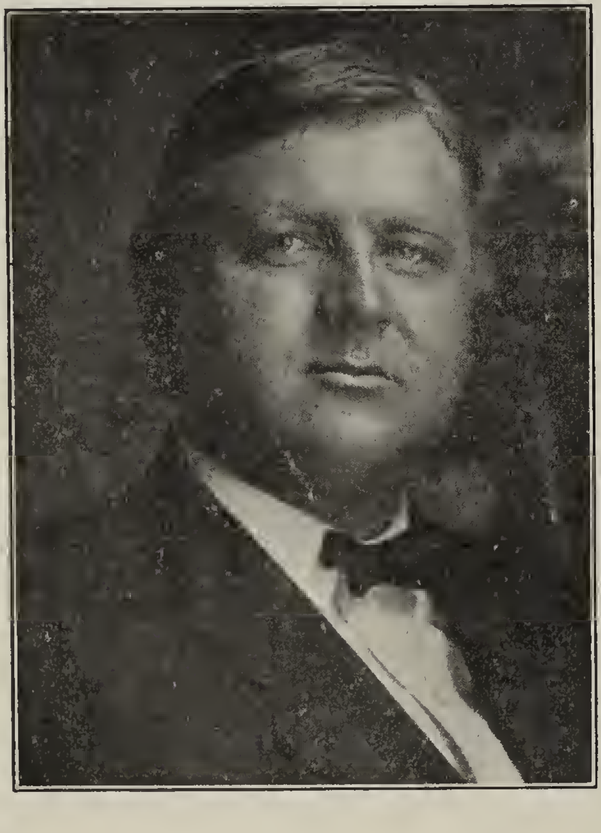
It did not require much of an actual outlay of cash to build the great wall of China. The people were taught that it was to their own interest and weal to build it. It was to save them from the Huns. Had beleaguered Belgium some such protecting barrier along her borders in 1914 it might have helped more effectively to stem the rush of the German hordes hastening to defeat at the Marne. The people living along the route of the wall were compelled to build it; they had no auto trucks or even wheelbarrows, so far as we know, with which to work, and since it would take hundreds of modern freight trains drawing thousands of cars, to haul all the material involved in the structure, we can partially, at least, begin to understand what a tremendous task confronted the workmen.

Modern China has never thought enough of the great wall to take care of it, even as a show place. Of course its worth for protective purposes is now ridiculous. But it is an interesting, even instructive piece of work, and is worth traveling long distances to see. Exploited properly, it could be made a drawing card for hosts of tourists. Contrarily, however, the wall is allowed to crumble and decay. As was said before, nothing is done to preserve it. But China is due to awaken soon. The truth is, China's alarm went off with a bang when the emperor was deposed and a republic founded. Some time, perhaps, the new order of things will better appreciate the works of the ancient order. Should this prove the case the world may some day hear that the finest automobile drive to be found anywhere runs for some sixteen hundred miles over mountain and plain right along the top of a brick wall thirty feet in the air thru the most picturesque places in far Cathay. Stranger things have happened; stranger things will continue to happen. When the tourists get to traversing the wall in their Lizzies or limousines then all the millions of brick in the old wall will have turned to gold brick.

* * *

GRIM REAPER DEATH CLAIMS HARRY FATE

As a distinctly unpleasant surprise and with quite a shock, comes the news that Harry S. Fate, president of the J. D. Fate Co., manufacturers of clay-working machinery and gasoline locomotives, Plymouth, Ohio, has passed into the great beyond. Mr. Fate died at 7 P. M. Sunday, May 26, as a result of an attack of apoplexy.


HARRY S. FATE

Mr. Fate had been ailing practically all during the past winter due to heart trouble becoming acute and for the past five weeks had been confined to the house, altho not all of the time to his bed. About three weeks ago he had a light attack of paralysis but recovered from that within a few hours. While at times he has been in a more or less serious condition, a few weeks ago he improved very much, and on Saturday, May 25, was feeling better than he had for months. Saturday evening, however, he took a sudden turn for the worse and died the following day.

The death of Mr. Fate will not in any way affect the continuation of the company's business. While it removes the president, the concern is so organized as to bridge the gap and carry on its service to the nation's clay products manufacturers without a pause.

Harry Shurz Fate was born at Crestline, Ohio, February 18, 1875, and came with his parents to Plymouth in the fall of 1881. He received his education in the public schools of Plymouth and was graduated from the high school in 1894. The present J. D. Fate Co., of which Mr. Fate was president at the time of his death, was organized in 1902. During the eight years preceding this date he was associated with his father in the same line of business.

Of the immediate family, Mr. Fate leaves his mother, Mrs. J. D. Fate, and his sister, Mrs. John A. Root, his brother Harley having preceded him just two years. There is a coincidence here worth noting. Mr. Fate lacked just one day of being two years younger than his brother. He died on the day just one day earlier than his brother, thus giving to each the same span of life.

* * *

Bauxite Produced in Georgia in 1917

In 1917 the Georgia bauxite mines increased their production of 1916 by 31 per cent., to a total of approximately 52,000 long tons, according to statistics compiled by the United States Geological Survey, Department of the Interior, in co-operation with the Georgia State Geological Survey. Mines near Gordon, McIntyre and Toomsboro, Wilkinson County, produced the most bauxite and together with those in the Sumter-Macon County areas yielded 37,000 long tons.

OIL *as a* FUEL *for* BURNING WARE

This, the Second Installment of Mr. Riddle's Article, Touches Upon the Subject of Cost of Atomizing Oil, the Metering of Oil and the Burning of Different Clay Products

By Frank H. Riddle, Cr. E.
Pittsburgh, Pa.

IT IS GENERALLY CONCEDED that air is a better atomizing agent than steam for kiln purposes with the possible exception of scove or clamp kilns. The chief reason for this is that the steam condenses when carried any distance and causes more or less trouble at all times and a good deal during the watersmoking. Technical Paper No. 25 of the Department of Commerce, by I. C. Allen and Walter A. L. Jacobs, states: "A fuel oil containing considerable water when burned under a steam boiler gives an unsteady flame that tends to go out. Water, being noncombustible, reduces the heating value of an oil in direct ratio to the percentage present, and converted into steam increases the inert and valueless gases within the fire box, reducing the heating effect of the combustible gases that should normally occupy the fire box space."

The above statement would indicate that it is doubtful if steam should be used at all. The actual operating cost of the two agents is practically the same per barrel of oil atomized; this from actual tests made with the two agents by the writer. The first cost of a compressed air plant is considerably higher than a steam plant. Of ten plants the writer has in mind, two are using steam and the superintendent of one of these plants said some very uncomplimentary things about a previous man who disposed of a compressor. One other plant is using air for watersmoking and steam for higher temperatures. The use of steam during high fire is on account of lack of sufficient air.

At what pressure the air and oil should be carried is important, and should receive considerable attention. At most plants they seem to forget all about the fact that compressed air costs money; in fact, a great deal of money, and that their burners should be designed with this as one of the principal factors.

The following table shows the horse power required to compress one cubic foot of free air per minute at various pressures:

Lbs. Pressure per Sq. Inch	H. P. Required
5	.0197
10	.0362
15	.0505
20	.0630
25	.0750
30	.0850
40	.1040

The above shows that if you are using 10 pounds of air you use .0362 H. P. and for 25 pounds you use .075 H. P., or 2.07 times as much per cubic feet of free air per minute This assumes that you use no more actual free air. However, when working with high air pressure it is much easier to use more in proportion and so increase the extra cost still more. Tables showing the flow of free air from receivers into the atmosphere, thru round holes, at various pressures gives an idea of how the cost will increase as the pressure increases.

Pounds Pressure	Diameter of Holes. ⅛"	¼"	⅜"	½"
5	3.86	15.4	34.6	51.6
10	5.45	21.8	49.0	87.0
15	6.65	26.7	60.0	107.0
20	7.70	30.8	69.0	123.0
25	8.60	34.5	77.0	138.0
30	10.0	40.0	90.0	161.0
40	11.2	44.7	100.0	179.0

Consider both the above tables as an extreme case using a ⅛-inch hole and 10 and 25 pounds pressure. The second table shows 5.45 feet of free air thru a ⅛-inch hole at 10 pounds and 10.0 cubic feet at 25 pounds or 1.83 times as much. The extra power times the extra amount then, will be 2.07 times 1.83, or 3.79 times as much power; i. e., it is possible where the conditions are not looked at carefully to use nearly four times as much power as is necessary and increase the cost in proportion.

There is no doubt that it is much easier to raise heat in a kiln with high air pressure than it is with low pressure, but for economical operation it is very important to keep the pressure as low as possible and still keep enough pressure to be able to raise heat at the proper speed. It is safe to say that in 80 per cent. of the plants operating, they maintain a higher air pressure than is necessary. In actual tests made by the writer at several plants, the cost of compressing air for each barrel of oil atomized has varied from about 11 cents to as high as 33 cents. This variation is not all due to difference in pressure, of course, but also depends on the kind and size of power installation, production, and other variations. At one plant they claim they atomize a barrel of oil for 9 cents. Their method of determining the cost was not explained. The vital point is that if it takes three and one-half barrels of oil to equal a ton of coal and it costs 15 cents a barrel to atomize that oil, you can have a labor cost of 3½×15 cents or 52½ cents more per ton of coal than you have for the equivalent amount of oil, and still break even on the labor cost; i. e., in burning oil the atomizing agent takes the place of firing labor necessary in burning coal and must be figured in making a comparison.

DETERMINING THE COST OF AIR

To arrive at this cost in a steam plant, it is essential to have a power distribution sheet and know how much power is being generated, its total cost, also the amount of power required to operate each productive machine and the time it ran. A power sheet that the writer has worked out successfully on several plants is as follows:

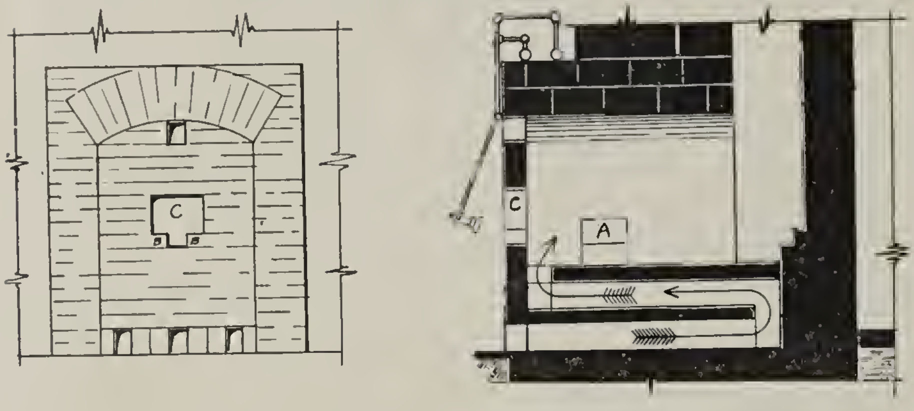


Fig. 7 Shows Detail of Fire Boxes Used.

MONTHLY POWER DISTRIBUTION SHEET.

Name of Unit	Total Hours Run	Horse Power	Horse Power Hrs.		All Power Transferred to Productive Machines	%	Power Cost Distributed¶
Boiler 1	744	5% of total	4,271	Non-productive	....	......	....
Boiler 2	252	5% of total	....		....	......	....
Feed-water pump	744	2	1,488		....	......	....
Radiation losses	744	....	17,519		....	......	....
Total	......	....	23,278		....	......	....
Oil pumps	744	3	2,232	Productive	3,010	3.4	*$ 27.73
Compressor 1	744	20	14,880		20,100	22.4	184.90
Compressor 2	575	20	11,500		15,530	17.3	142.90
Dry pan 1	252	30	7,560		10,200	11.4	93.94
Wet pan 1	225	25	5,625		7,600	8.5	69.90
Wet pan 2	225	25	5,625		7,600	8.5	69.90
Pipe press	225	50	11,250		15,185	16.9	139.80
Dryer floor	519	15	7,725		10,450	11.6	95.93
Total productive	......	....	66,397				
Total	......	....	89,675		89,675	100.0%	$825.00

Note: All proportions done on slide rule and percentage figured to first place.

Oil burned at kilns equals 2,370 barrels, and cost of atomizing equals $355.53, or 15c per barrel.

The above power distribution sheet shows the air cost as sharing all power expenses. To determine the actual extra cost of the air, assuming that all the fixed charges are taken care of, it would be fair to assume that the extra cost would be just the extra fuel used. In that event the above sheet would be altered and the extra fuel amounting to 353.8 barrels at 70 cents per barrel, or a total cost of $247.60 as compared with $355.53 and the cost of atomizing the oil at the kilns would be 10½ cents instead of 15 cents per barrel. On the other hand, with the boilers going at a fair rate all night they require more constant attention than they otherwise would and so the labor would be greater than when the night man could do more extra work. This should be considered.

The simplest way to get actual power consumption of compressors is as follows: Take the counting register of a meter and attach it to the compressor so as to be able to get the revolutions of the fly wheel. The meter parts can be purchased at any meter manufacturers and put in place by a machinist. By reading this meter, as any other meter would be read at the end of each period for which the power is to be determined you can get the total number of revolutions of the compressor and from this can calculate the revolutions per minute for the period. The power required to operate a steam driven compressor should be determined by a steam engine indicator. This should also be determined while the compressor is operating at various speeds. Knowing the average number of revolutions per minute and the power required to operate the compressor for that average speed makes it possible to figure the power as shown on the distribution sheet. If the compressor is electrically driven it is easy to arrive at the actual power cost by using a meter. No counter is necessary then.

AMOUNT OF OIL USED IN BURNING

The variable conditions in oil burning are just as numerous as those in coal burning. For this reason it is impossible to give more than general figures. The following table shows briefly the low, high and reasonable amounts of oil burned per ton (burned weight) of ware drawn in periodic kilns.

	Barrels of Oil Burned per Ton of Ware		
Kind of Ware—	Low	High	Reasonable
Face brick	1.0	1.75	1.1
Fire brick	.7	1.75	1.0
Common brick	.6	1.50	.8
Sewer block	.7	1.75	1.0
Sewer pipe	.9	2.50	1.7
Conduit	.9	2.50	1.5
Chimney pipe	.9	1.50	1.1
Flue lining	.9	1.50	1.1
Partition tile	.8	2.00	1.0

All the above figures are given in burned tons of ware on account of the variation of weights of products in different places.

Sewer pipe has probably as wide a variation as any product, as shown by the table, and the writer has seen even more extreme cases. This will be discussed under sewer pipe burning.

METERING OIL

To burn any fuel economically it is positively necessary to know how much is being used on the various units. The total fuel bill for the month is no real help. It does not tell how much fuel is used for power or how much for burning various products, if more than one is made. If there are different types of kilns it does not tell which type is the most economical. The proper way of measuring oil is by weight at a known temperature. The expense of this is too great for the average clay plant and the only means left is that of metering the oil.

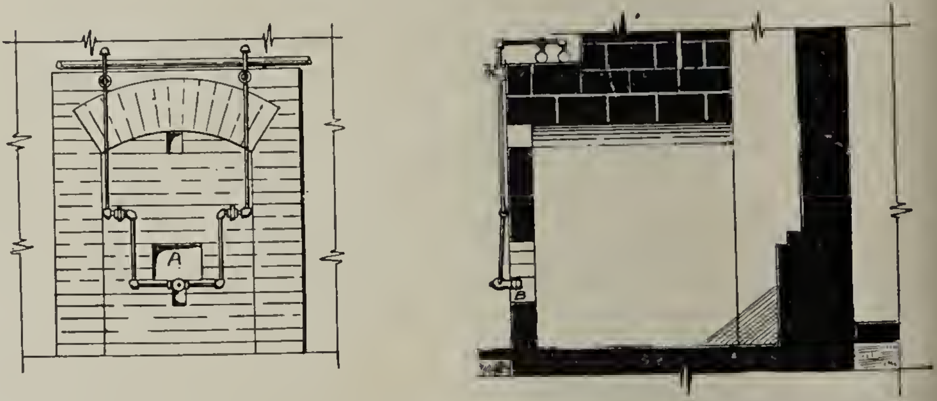


Fig. 8, Showing One of the Most Satisfactory Fire Boxes for Salt Glazing.

¶Cost of power:

Labor	$215.00
Fuel, 821 barrels oil	875.00
Supplies	25.00
Repairs	10.00
	$825.00

*Power cost for burning, total, $355.53, or 43.1 per cent. of total power. Total oil used for power equals 821 barrels; 43.1 per cent. used for burning equals 353.8 barrels; at 70c per barrel equals $247.60.

There are two general types of oil meters, plunger and disc, but the plunger meters, altho more expensive, are more satisfactory than disc meters. The calibration of meters is important and should be done at frequent intervals. A simple method of calibration that can be done with little trouble on the average clay plant is this. Have a barrel of known volume with a means of connecting a meter, under the oil pressure used in the plant, just above the barrel. Connect up a meter, read it, run enough oil thru it to fill the barrel and read the meter again. The difference between the volume in the barrel and the amount shown by the meter readings will be the correction. With plunger meters, the meter can be altered so as to work correctly if not reading right but a correction factor will have to be used for the other meters. After running six months the correction on some meters will be as high as 15 per cent. The ideal method is to have a meter on each kiln and boiler, and use these meters as checks against the volume of oil used from the supply tanks. This is actually done on some plants. There will always be some correction to make, even allowing for the meter calibrations. The reason for this is on account of the change of volume of the oil with changes in temperature. With a meter system it is possible to make a change in a kiln or method of firing and know if it results in a gain or loss in the amount of oil required; also to know the oil consumption of different kilns and be able to determine why one kiln is using more oil than another. If the kilns were not equipped with meters one kiln could burn four or five barrels of oil more per day than another and it would never be known. If this same four or five barrels could be saved on each burn it would very soon pay for the meter and probably result in more savings.

It is far better to have one meter and change it from one kiln to another, than it is to have none, and the trouble of moving it is well worth while.

Where it is possible to meter the boiler feed water, including return water, also meter the oil and keep track of the temperature of the feed water temperature, as can easily be done, it is possible to determine fairly well what the boiler efficiency is. This is well worth while, as the boilers are in operation twenty-four hours a day seven days in the week, and a slight hourly saving amounts to a good deal in a month.

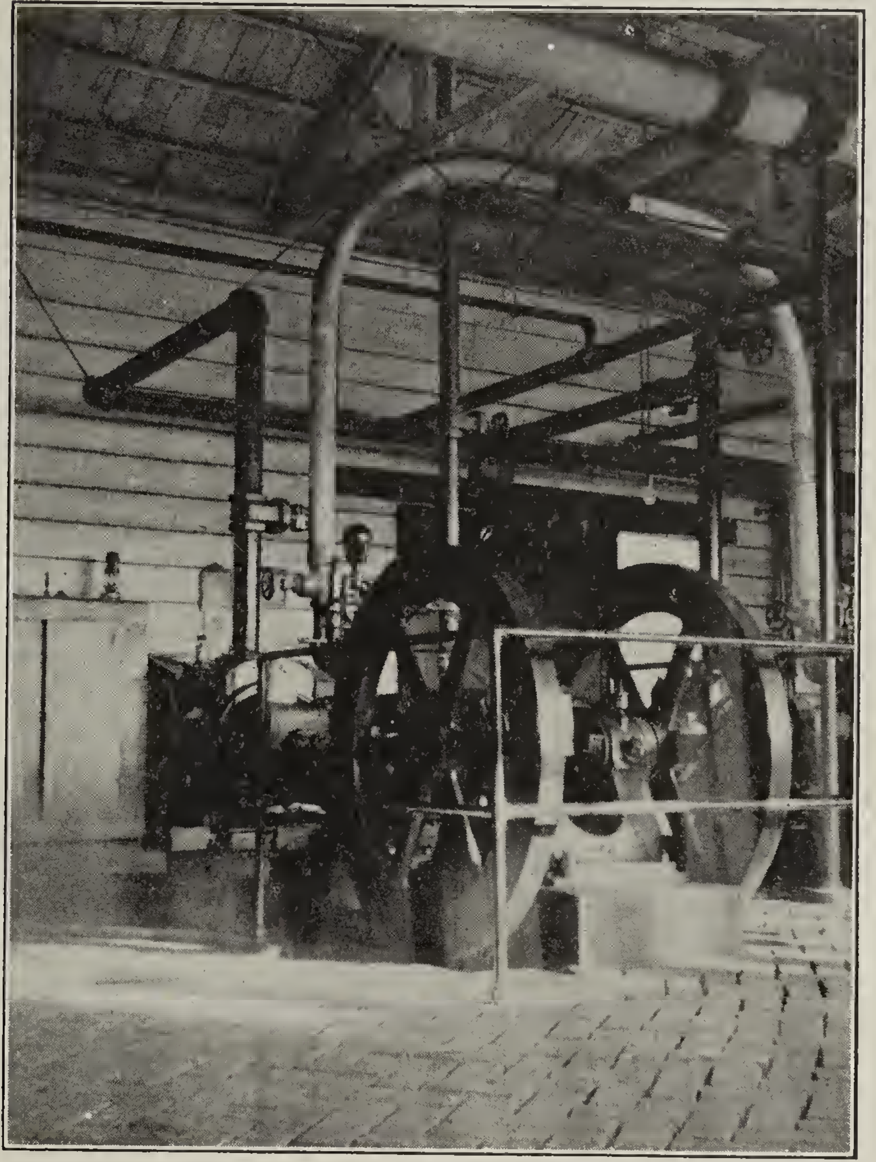
BURNING BRICK OR SIMILAR WARE

This description applies to nearly any ware that is not salt-glazed. This and the description of burning sewer pipe are not accurate descriptions of any special burns, but are meant to be about average for the conditions in common practice.

Assume the kiln to be a 16 ft. by 72 ft. rectangular downdraft kiln containing 152,000 stiff-mud brick, each weighing 5.75 pounds, or a total of 437 tons. The kiln has twenty-four fire boxes, or twelve on each side. A detail of the fire boxes is shown in Figure 7. Note the arrangement for pre-heating the air that is fed to the burner tips thru the under flues. This makes no real saving in fuel, but does supply hot air instead of cold, and this will tend to keep the flame close up to the burner tip instead of blowing back. This arrangement is good in many ways, but must be watched in the water-smoking to prevent some of the oil from not burning, and running down into the flues.

During water-smoking, the oil is thrown against the four brick "A" and the bottom. Two side brick "B" are also put close to the burner. These brick get hot and all tend to keep the oil burning. The burner hole "C" is kept open to admit sufficient air to cool off the gases before entering the kiln. That is, the principal point in water-smoking with oil is to get a hot flame in a small local spot so as to get combustion and then supply enough cold air to cool the gases down before they enter the kiln. The brick "A" are arranged in a V, with the point of the V away from the burners, so the oil is blown inside the two walls and a local hot spot maintained. As the kiln becomes hotter and the heat can be increased the point of the V is gradually opened up and the oil allowed to burn further and further back along the bottom of the fire box. When the box is hot enough the brick "A" (flash brick) are removed all together.

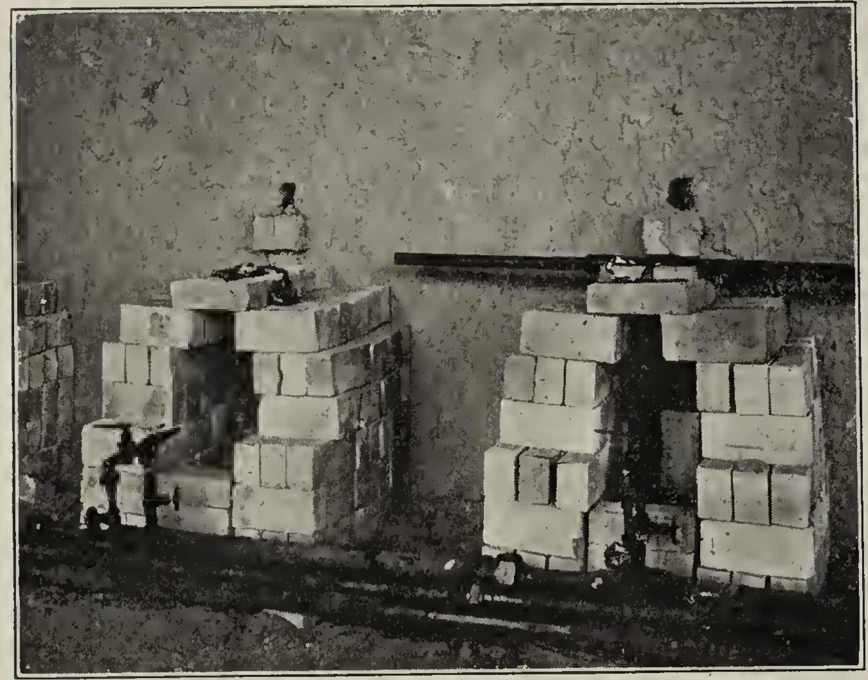
Another method of water-smoking is by the use of drip burners. This, however, is not altogether satisfactory unless the ware must be dried very slowly and provided it can be smoked during this early stage up to 250 deg. C. The drip burners are arranged so that the oil drips down on to a thin metal plate and burns without being atomized. The heat generated assists in this combustion and it is sometimes aided by a slight pressure of air playing on it. The use of either method sometimes requires the firing of alternate boxes. The drip method is not as bad as it would at first appear to be and has the advantage of saving some air and considerable attention. The number of flash brick that are destroyed in a year's time on a large yard is also an item and they must be removed from the fire box each burn. This is particularly necessary in the case of salt-glazing.


One of the Air Compressors Used for Atomizing Fuel Oil at Plant No. 6 of the Pacific Sewer Pipe Co., Los Angeles, Cal.

When the kiln is heated thru and heat raising can be begun, the kiln should be dampered about the same as a coal-burning kiln, i. e., all that experience shows that it will stand. Care must be taken not to damper the kiln so much that the heat is held in the box, as it will not only give a soft burn in the bottom and flash the top, but it will also probably burn up the boxes.

There is no doubt that there is as much oil wasted as there is coal, in proportion, due to burning with too high a draft, and a resulting air excess. However, the oil burning permits of a better control of fuel consumption and where attention is given to this matter the possibilities for economical operation are better than with coal.

To start with, there is no opening and closing of doors to constantly change the air excess. If the kiln is equipped with a pyrometer, a meter and a draft gauge, the regulation can be good, or even omitting the gauge. When a time temperature curve has been determined upon and it is decided to follow it, then it is necessary to burn sufficient oil under sufficient draft to gain heat as rapidly as the schedule shows. In doing this, keep track of the gallons of oil being burned per hour, and it will not be many burns until it will be known what the minimum amount of oil is that can be used to gain the required amount of heat. When firemen are put on schedule and instructed what temperature they must have at the end of their shift, and have the previous records for their kiln before them, they soon learn to study these and can burn with remarkable uniformity. The air supply is controlled by the opening or closing of the air inlets into the fire boxes as well as by the damper.



Two Powerful Jets Which Shoot the Oil Flames Into the Furnace.

Even if the kilns are equipped with one or the other, i. e., meters or pyrometers, a fairly regular schedule can be maintained. If thermo-couples are used, they should be placed as near the center of the crown as possible, just as they should be for coal, particularly for accurate reading of the temperature in the early stages of the burn. If any one box becomes too hot, the heat will rise to the crown and the thermo-couple will be affected. If the couple is down on the side or in the wicket between two fire boxes it is of little value and can be controlled more or less by the boxes on either side of it, and will show very little about the other side of the kiln.

Where the burning is properly done on a plant where oil is used for fuel, it is not uncommon to have the length of the burns regulated so they do not vary more than two or three hours on five or six day burns. As a rule, brick can be burned much more rapidly with oil than with coal, and the per cent. of No. 1 ware will probably be higher. There are so many conditions that govern the time of burning, as tonnage, kind of clay, etc., that it would be difficult to give accurate figures.

The writer has had experience with round down-draft kilns burned to cone eight to ten that held an average of 150 tons of stiff-mud face brick that were burned off in six days. They could be burned faster than this, but did not give as high a per cent. of No. 1 ware. Fire brick can be burned in four and one-half days.

The following schedule gives an idea of the time, temperature and oil used in burning ware of this sort. This is for 152,000 brick in a rectangular down-draft kiln, with inside dimensions of 16 feet by 72 feet:

Period— Start		Hrs. on Fire	Gallons of Oil Per Hour	Total	Temp.C°	Remarks
	1	8	11.25	90	75	Damper up, flash brick in, doors open fully.
	2	16	22.50	180	80	
	3	24	26.25	210	100	
	4	32	42.50	330	120	
End of water-smoking.	5	40	63.75	510	150	Rod very wet
	6	48	87.50	690	300	Rod dry
Start to heat raise	6	48	150.00	1,200	415	Fl. brick out
	8	64	157.50	1,260	530	Draft 3.5
	9	72	168.70	1,350	645	One brick in "C"
	10	80	180.00	1,440	760	
	11	88	187.50	1,500	875	
	12	96	193.70	1,550	990	Damper to 3
	13	104	200.00	1,600	1,105	
	14	112	206.20	1,650	1,175	
"Soaking"	15	120	212.50	1,700	1,205	
"Soaking"	16	128	218.70	1,750	1,230	
"Soaking"	17	136	225.00	1,800	1,250	
Finish	18	140	212.50	1,700	1,260	Kiln off

Total oil, 20,510 gallons, or 488.3 barrels.

Four hundred and thirty-seven tons burned with 488.3 bbls. or 1.118 bbls. of oil per ton of ware.

BURNING SEWER PIPE

The burning of sewer pipe is done in practically the same way as the burning just described insofar as control of the heat is concerned. The time of burning, size of kilns, tons of ware per kiln, etc., all vary widely.

There seems to be a belief among those who burn coal that it is difficult to salt glaze ware with oil. As a matter of fact it is much easier, in most cases, to salt glaze with oil, and the percentage of No. 1 ware in the districts where oil is burned is far higher than it is where coal is burned. The use of oil is not the only reason for this high percentage of No. 1 ware, but has considerable to do with it. One of the chief reasons for this is that the fires can be controlled during salting far better with oil than with coal and the temperature can be maintained or increased. Another reason for the high per cent. of No. 1 ware is on account of using a mixture of clays in the body. Some fairly refractory clays to hold the body up, and some clays that mature at a lower temperature, make the body tight and help in the glazing. With a combination of this sort it is possible to repeat the salting as many times as is necessary.

The fact that oil burning is a success with salt glazed ware can best be shown by stating some facts as follows: There is one oil burning plant in operation that is making a yearly average of ninety-seven per cent. of No. 1 ware. Another oil burning plant which has eight kilns is drawing over twenty-nine kilns of ware a month and averaging well over ninety per cent. No. 1 ware. This plant has successfully burned 10 inch pipe in a twenty-seven foot kiln, averaging 90.6 per cent. No. 1 ware, in forty-five hours from the time the kiln was lighted until the fires were out. They burn 12 inch pipe in forty-eight hours right along. The clay the ware is made of is not a difficult clay to water-smoke or oxidize and the ware is set dry.

The quality of oil burned sewer pipe, like coal burned sewer pipe varies considerably according to the setting. Some clays are of such a nature that the ware made from them can be set four high and the larger pipe nested with smaller pipe, and other clays cannot. As previously stated the comparison between burning with oil and coal should be made on the basis of the value of the production from each square foot of kiln space per day and the cost of burning that amount of ware. Some plants are located where there is a small market for second grade ware and their first consideration must be quality.

Under the heading "Amount of Oil Used in Burning," it was stated that consumption of oil per burned ton of sewer pipe varied from 0.9 bbls. to 2.5 bbls. and that 1.7 bbls. was a reasonable consumption. It might be well to add that this applies to kilns from twenty-five to thirty-six feet in diameter and with wide variations in tonnage. For a thirty-foot diameter kiln the tonnage varies from thirty to sixty tons and for a thirty-six foot kiln from fifty to eighty-seven tons. The average time of burning a thirty-foot kiln of small pipe is from two and one-half to five days, and for burning thirty inch pipe from five to six days. The average time for burning a thirty-six foot kiln of large pipe is from six to seven days. The writer has seen all these variations, but in most cases the average of No. 1 ware has been above ninety per cent.

It is well worth noticing from an efficiency standpoint that a kiln of ware set with a small tonnage will, in most cases, take more oil to burn it than the same kiln set with a heavier tonnage. If it takes less oil for the total burn and contains a heavier tonnage it is easy to see that the saving in oil per ton is considerable.

SALT GLAZING

A table follows that gives an idea of the general burn. The table, together with what has already been said, describes the burning of a kiln up to the salting period.

One of the most satisfactory fire boxes for salt glazing is that shown in Figure 8. This is a box of standard construction and simple in design. It could be built as some oil burning boxes are, with the arch over the box increasing in height as it approaches the inner wall of the kiln, i. e., enlarging the throat of the box. This is good, tho not essential.

The feature of the box illustrated is the way the front of it is built up. The opening "A," thru which the salting is done, is made approximately 9½ inches wide by 8 inches high, with a "leg" opening "B" beneath in the center, this opening being 5 inches high and 4 inches wide. The opening "A" is of such a size that it can be closed by placing three brick in it on the flat. The burner is placed as high in the "leg" opening "B" as it can be for operating. This leaves a 3 inch by 4 inch opening into the box just under the burner. The bottom of the opening "B" is about ten inches above the bottom of the box. There is an opening just under the arch at the top of the box, 3 by 5 inches that can be filled by a brick. This opening is used to keep the arch cool.

Shortly before it is time to salt, the burning is carried on in such a way that the boxes are heated as hot as is safe. This is usually done by closing the opening "A." When the kiln is ready to salt, as shown by the cones or some other means, the brick are taken out of the opening "A" and a small shovel of salt is thrown into each box. As would be expected, a dense volume of salt fumes is immediately thrown off. Most of this will pour into the kiln as the damper is not lowered too much at first, as it is desirable to keep the heat clear and get the salt fumes well thru the kiln and sucked down into the inside of the smaller pipe.

The salting is continued at intervals of about every twenty minutes and the damper gradually lowered until the suction is nearly balanced and the kiln might be said to be burning under a low pressure. This condition, which is important, is about right when a peep hole about three feet off the ground in the "wicket" will show a "lipping" out or alternate suction and blowing just after a fresh salt charge has been thrown on the fires. The damper is usually held to maintain this condition until near the completion of the salting. If any of the boxes or the inside of the kiln show signs of cooling off, heat is again brought up by raising the damper.*

The damper is lowered again as soon as the heat is regained. Trials should be drawn from the kiln and inspected from time to time and the position of the ware should be watched from the top of the crown to see if there are any signs of the ware leaning.

As the salting progresses one and sometimes two brick can be put in the opening "A" and when the kiln is nearly done the glazing can be improved by putting in all the brick, lowering the damper accordingly, and salting with a small square edged shovel slightly narrower than the opening just under the burner, repeating this operation two or three times at twenty minute intervals.

This slowing down of the draft tends to fill the most remote portions of the kiln with salt fumes and so brighten up the glaze on the ware in between the bags down near the outside walls. The kilns are usually kept dampered down until the salt is fairly well burned out, i. e., from half an hour to an hour, when the fire boxes are opened and the damper drawn and the kiln rapidly cooled until the bags are a dark red. At this stage the boxes are closed tight and the damper closed.

The salting period lasts from two to four hours or even longer, and the kilns are usually salted eight times or more. The amount of salt required is from two hundred and forty pounds to several hundred pounds, for thirty-foot kilns. Certain shales would, no doubt, take a glaze much more easily and with less salt than the clays generally in use.

Repeated saltings form considerable glassy clinker, hence the necessity of having the bottom of the fire boxes tight, as shown in the cut.

Some kilns are not arranged with salting openings, as described above. When a kiln of this type is ready to salt the top four or five courses of brick are removed from the fire boxes and the salt thrown in. This method is bad; the heat is excessive and the kilns unpleasant to work around, and the chances are greater for loss of salt fumes. Where the first method is used the salting is done with less salt than where the cruder method is used.

When the salting has been done properly the draw trial pieces from the bottom of the kiln should be bright and show a fairly thick glaze, tho not as thick as the trials from the top. There is nothing unusual about the cooling, which is done by the same methods as coal fired kilns where similar clays are used.

An average schedule for burning pipe is as follows:

			Gals. of Oil			
Period		Hours on Fire	Per Hour	Total	Temperature C°	Remarks
Start	0	0	10	0	70	Damper up
	1	8	12	80	90	
	2	16	18	96	110	Dry
	3	24	25	144	150	
End W. S.	4	32	50	200	200	Damper lowered
Strt H. R........	5	40	60	400	420	Lowered more
	6	48	65	480	700	
	7	56	70	520	930	
	8	64	75	560	1060	
Salting	9	72	....	600	1100	Finish

Total Oil, 3080 Gals., 73.5 Bbls.

Burned 45 tons ware with 73.5 bbls. oil or 1.63 bbls. to the ton.

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*Transactions of the American Ceramic Society, Volume XVII. "Time Temperature Curves During Salting of Some Oil-Fired Sewer Pipe Kilns," by F. H. Riddle and A. L. Gladding.

NOTES *on* MAGNESITE BRICK

AT A MEETING of the Ceramic Society at Stoke-on-Trent, England, held March 9, a paper on "Magnesites and Magnesite Brick" was read by W. Donald, of the Eglington Silica Brick Co., Ltd., Coatbridge, N. B. An abstract of this paper was published in the "British Clayworker" and is here reproduced.

Refractoriness in the case of magnesite brick has relation with density, porosity, tensile strength, resistance under load at high temperatures and chemical composition. In order to have control of these factors, a full knowledge of the raw magnesite is necessary, including the nature and amounts of mineral impurities, the effects of heating at different temperatures for different periods, with slow or rapid cooling, and with oxidizing or reducing atmosphere, with or without previous elimination of certain impurities or the addition of other materials. Important information is obtained by detailed microscopic examination of both raw materials and finished product, as the causes of physical changes, and the course they take, may often be traced in this way.

Greek magnesite has usually more silica and lime, but much less ferric oxide, than Austrian magnesite. In the finely crystalline Greek magnesite the mineral impurities—more especially the oxide of iron and alumina—are distributed very irregularly, which increases the difficulty of satisfactorily calcining the mineral thruout in a single firing. Canadian magnesite deposits are even more irregular. In the author's opinion, by careful selection of the material, Greek magnesite could be made to compare much more favorably with Austrian magnesite as regards silica and lime content.

A COMPARISON OF MAGNESITE BRICK

In comparing sections made of Greek magnesite brick fired at 1,750 deg. C. and 1,850 deg. C. with similar sections of Austrian brick, it was seen that the faces of the Greek brick nearest to the source of heat were quite fused; half an inch from that face the structure of the brick showed change from small to large crystals, but where large crystals had been formed no bad effect of heat was noticeable. Austrian brick showed no sign of being fired at a high temperature. In the Austrian brick the magma is practically uniformly distributed thruout the brick, and had interpenetrated each particle. In the British-made Greek brick, the magma is not so evenly distributed, but after successive spallings the brick is converted bit by bit into the larger crystal formation, when the impurities present in the magma often give rise to a frothing with great porosity. The silicates of magnesia present are bulky and highly viscous, and must be almost immovable as a molten liquid at 1,650 deg. C. tho they melt at 1,550 deg. C. Hence the author thinks ferrous iron must be introduced. In this connection it may be recalled that Austrian magnesite has ferrous carbonate regularly distributed thru the mass.

Dr. A. Scott shows that magnesia compounds and lime compounds have melting points between 1,500 deg. C. and 1,550 deg. C. and any compounds, including both the magnesia and the lime, have melting points at least 150 deg. C. lower. This implies that lime should be eliminated as far as practicable, and that what lime is present should be uniformly distributed along with the other impurities, and therefore the magma which is formed should have a consistency which will not offer too great an obstacle to the uniform distribution.

The results obtained with British-made brick used in basic open-hearth furnaces, pig-iron mixers, Talbot furnaces, and electric furnaces are on the whole satisfactory from the steelmakers' point of view. Difficulties are still experienced from spalling, from inability to withstand the corrosive action of basic slag and inability to stand the great heat in the roofs of electric furnaces. In one electric furnace seventy-five heats were now obtained with Greek magnesite brick for the same life of magnesite lining which formerly with Spaeter (Austrian) brick gave 120 heats. In another electric furnace the Austrian magnesite brick in the side walls withstood the action of the molten steel and the basic slag without showing the frothing and porosity to be seen in the Greek brick. In another electric furnace it was possible with Austrian brick to get good results in the roof even with less experienced furnace hands than those now available.

TWO TYPES OF MAGNESITE BRICK MARKETED

Generally speaking, two main types of magnesite brick are on the market; one type is made from finely ground material, and weighs about 72-76 cwts. per thousand, sometimes up to 80 cwt. per thousand; the other type is made from less finely ground material, and weighs 82-86 cwts. per thousand, or sometimes up to 88 cwts. per thousand. In sections of the former type finer particles are to be seen, and, on the whole, a more complex color scheme; in the latter there is greater light and shade between particles and magma and also between different particles. These points were demonstrated with the aid of lantern slides, and the structure of particles, and the distribution of particles and magma in various brick were shown. By comparison with sections of calcined magnesite, it was shown that a large percentage of particle in British-made brick remains in the state of calcined magnesite, and that the impurities (magma) surround the particles rather than interpenetrate them.

Sections of Indian and Greek magnesites calcined at about 1,250 deg. C. showed minute granular forms. Indian magnesite calcined at 1,750 deg. C. in an electric furnace showed alteration taking place, which was greatest at places where impurity was present. Greek magnesite electrically calcined at about 1,900 deg. C. showed that the particles had completely altered about the impurity and that the alteration had spread round. Greek magnesite calcined much longer at a lower temperature (in a modern shaft kiln under highly reducing atmospheric conditions) showed the change of mineral particle to have practically spread thruout the mass. There was a strong resemblance between the massive crystalline appearance now in the Greek magnesite, even where there was no coloration, and the lighter parts of Austrian brick, tho there was still some difference, but the author confidently expressed the opinion that in the economical course of manufacture the minute magnesite crystals in the raw Greek magnesite could be converted into the kind of crystalline material naturally presented in the Austrian brick. It had been stated that the Austrians calcined in rotary kilns, tho shaft kilns were used originally, but the author considered there would be great difficulties in using rotary kilns under suitable conditions for calcining an appropriate mixture of Greek magnesite and ferrous carbonate. He thought the modern gas-fired shaft kiln could best answer the needs of magnesite brickmakers whose raw materials were in the crypto-crystalline state.

A pressure of 300 tons had been reported as being applied in the molding of Austrian magnesite brick, but the author considered that even with the pressure used here it was possible, with suitable adjustments of the milling and molding plant, to increase the weight of the brick from the standard of four tons per thousand to 4¾ tons per thousand, as against 4⅜ tons per thousand for the Austrian brick.

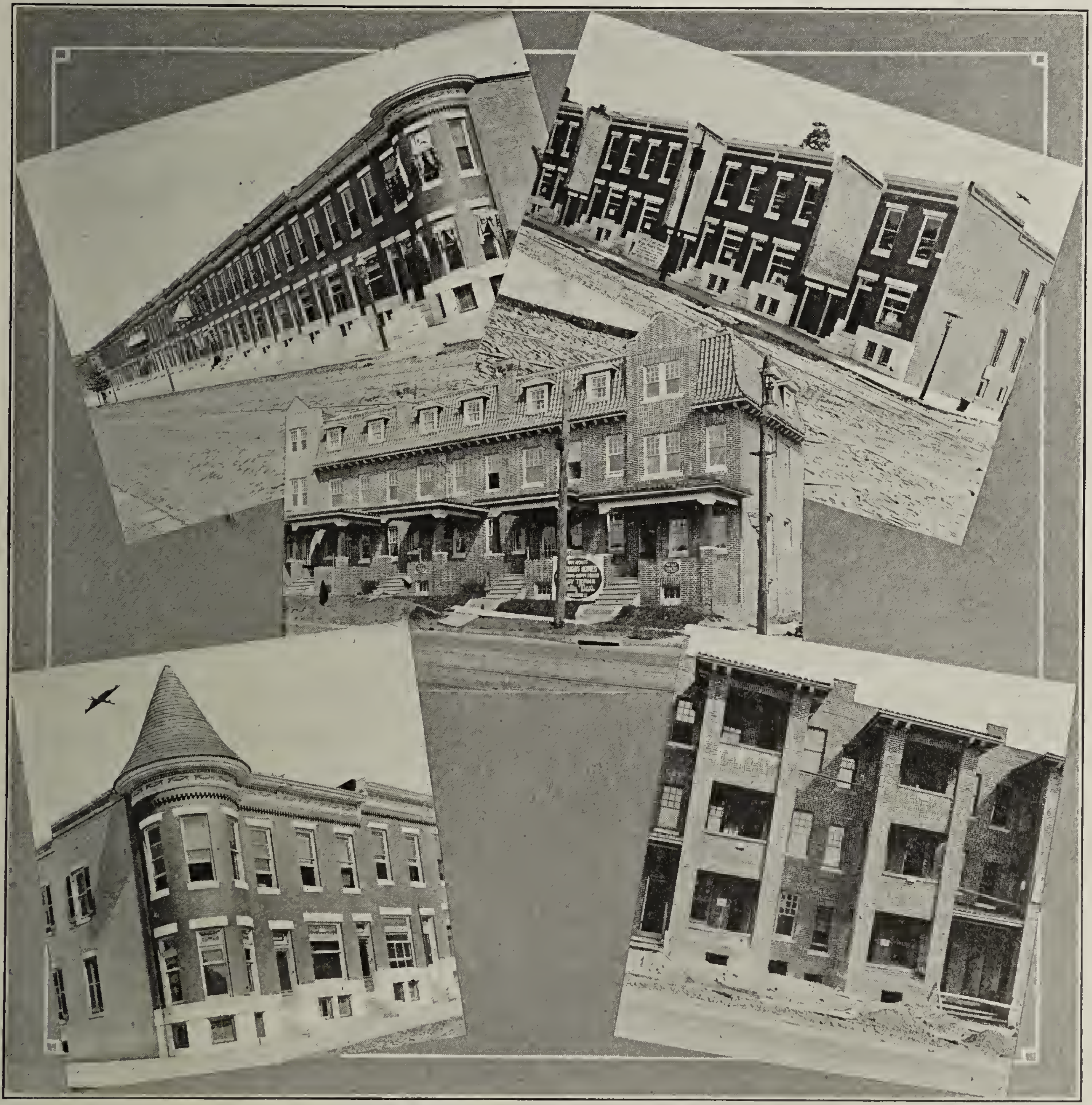
RESULTS OF EXAMINATIONS

The author's main conclusions, drawn from microscopic examinations, included the following: (1) With proper application of heat, crystal growth can take place more quickly and regularly if there is a uniform percentage of impurity thruout the magnesite. (2). The impurity-magma should be able to interpenetrate the finest interstices of the magnesite particles instead of merely coating them; otherwise the proportion of impurities should be correspondingly less. (3) If these particles are unaltered from the crypto-crystalline state by calcination, the alteration takes place when the brick are in use, and after repeated spalling the section of the brick with altering particles is exposed to the direct action of slag which can penetrate the pores, causing frothing with greatly increased porosity. (4) By proper management the conversion from the crypto-crystalline state to the larger crystal growth could probably be attained more uniformly than has been done hitherto. (5) When ferric oxide is present, the conversion of the crystal growth from the crypto-crystalline to the massive crystalline is much more uniformly attained within a certain distance from the ferric oxide, and the resulting material is closely comparable to the Austrian product. (6) British-made magnesite brick most closely corresponding in micro-section to the Austrian magnesite brick, both in regularity of growth and as regards the microscopic appearance of the magma, are those which have given the best results in furnace linings.

BRICK HOUSES *of* BALTIMORE

THE DEVELOPMENT of the two-story brick house in Baltimore is different from that of any other city in America.

The "Monumental City" builders have found that the industrial middle class population likes to own its own home, and with the ground rent system of Baltimore this is an unusually easy thing for working men to do. Consequently houses that sell from $1,200 to $1,600 are a first class in-



Variety in Architecture Does Not Seem to Appeal to the Baltimore Builder. Even in the High Class Apartment Houses Row After Row is Erected on the Same Pattern.

vestment; the building associations see to it that the builder gets his money right away, and as a result, the outlying sections of Baltimore, especially to the east of the city, have been built up with thousands upon thousands of these six or seven-room brick houses.

An editor of a national magazine, a New Englander on his first trip south, stopped off in Baltimore to get material for an article. He noticed the hundreds of rows of little brick dwellings, each hugged close by the neighbors on either side, and said in amazement, "Why, every one of them looks exactly like the other! How in the world does the workingman know which house is his when he comes home from work at night?" And when the magazine subsequently published a Baltimore article, this comment was published beneath a photograph of one of the rows of houses.

The houses are built of common and face brick, sometimes red, but more generally yellow. Everyone is dignified with the inevitable three or four marble steps. The more expensive ones are equipped with steam heat and electric lights. An effort was made to get some builder to estimate how many millions of brick were used yearly in building such homes as these. His reply was, *"Millions!—but how many millions I don't suppose anyone knows!"*

Year after year as the city's limits creep farther out into the country, these houses grow in symmetrical rows. Every house looks enough like its neighbor to be its twin; there are miles and miles of them. If they do not make impressive municipal architecture, there is this much to be said of them —they are homes of happy, hard-working citizens, who enjoy comforts in these neat little homes they could not afford in more imposing dwellings. *And they do help the brick business.*

Variety in arcihtecture does not seem to appeal to the Baltimore builders or architects. Having designed one type of building, a builder proceeds to erect row after row on the same pattern exactly. In the photographs of the high class apartment houses, it will be noticed that even they are repeated one after another, indefinitely.

These brick houses are regarded as a strictly Baltimore institution.

⁂

Brick Buildings for Army School

There is being erected at Camp Mabry, Austin, Texas, the first group of buildings that are to be used for the new School of Automobile Mechanics which the University of Texas is conducting for the War Department. These buildings are of brick construction and are twelve in number. The total cost will be approximately $465,000. They will afford accommodations for approximately 3500 men. The school opened on May 15 with an attendance of 500, and this will be increased at the rate of 500 a week until the maximum number is reached.

These brick buildings form the nucleus of what is expected to become the largest automobile mechanical training school for the War Department in the United States. It was left to the Board of Regents of the University as to the type of buildings that should be erected. Brick was adopted as the construction material for the reason that it is planned that the school shall be a permanent institution even after the war is over. If the United States Government does not continue to operate it then it will be made a vocational branch of the University, it is stated.

The contract for the erection of these buildings was awarded to J. F. Johnson of Austin. He completed the first barracks building within about twenty days after the contract was let, working day and night shifts of men. The buildings are two stories and are specially adapted for the hot summer climate of this latitude. They will be occupied as barracks, shops, mess hall, kitchen and administrative offices. The only wooden structure in the new camp is the Y. M. C. A. hut.

That the University of Texas believes in brick type of buildings is shown by the fact that it has also expended $165,000 in the enlargement of the brick buildings of the old State institute for the blind, to provide accomodations for the School of Military Aeronautics which it is conducting for the Government. There is in attendance at this latter school about 1,400 student aviators.

⁂

Chimney Falls to Ground Intact

Can a brick chimney be blown over in a tornado and still be a chimney? A cyclone demolished much of the small town of Calmar, Iowa, recently. The big brick chimney on the fine new Pierce Hotel was loosened from its foundation and went quietly and calmly down thru the air, not as flying brick as is usually the case when a chimney is loosened from its foundation, but as a chimney, and deposited itself full length on the ground intact as a chimney, and not as a pile of debris.

Chimney Blown Over In Recent Cyclone at Calmar, Iowa, and Found Intact on the Ground.

⁂

Prepare Yourself for Government Work

The 1918 summer session of the University of Illinois, Urbana, Ill., will offer special advanced courses planned especially for instructors in mechanics in trade schools and technical schools, for chemists who wish to fit themselves to take positions involving the physical testing of materials, and for men who wish to fit themselves for positions in commercial or government testing laboratories. Three special courses will be offered:

1. Advanced Mechanics of Materials. Advanced problems in strength of materials. A knowledge of elementary mechanics of materials is a prerequisite for this course.

2. The Properties of Engineering Materials. Lectures and assigned reading on the properties of iron, steel, other metals, wood, brick and concrete. A knowledge of elementary mechanics is a prerequisite for this course.

3. Laboratory Work in Testing Materials. Study of testing machines and strain measuring apparatus; practice in standard methods of testing and tabulation of test results. A course in elementary mechanics of materials accompanied by work in the laboratory is a prerequisite for this course.

Further information concerning the courses and expenses may be obtained from the director of the summer session, University of Illinois, Urbana, Ill.

MACHINERY *and* EQUIPMENT HONOR ROLL

See Pages 1048, 1049 and 1050

THE BONNOT COMPANY, CANTON, OHIO

More than two dozen employees have joined the Government War Service. Six of these were Engineer Draftsmen, and D. W. Jasper, the company's Ceramic Engineer, is well known in the industry. L. E. Oldham is the son of A. A. Oldham, Secretary and Treasurer of the company.

Ralph Bernhardt

Wm. P. Duff
T. M. Hutchinson
H. A. Leader
D. Lungsford
E. S. McLaughlin
L. E. Oldham
O. H. Rex
A. Schwalm
H. W. Trump
R. Livingston
S. Harter
N. Capestrain
H. Singer
M. B. Reilly
M. Laurent
C. Schario
G. Freeze
P. Schubert
C. Reno
S. E. Gilky
H. McCarthy
L. Swigert
D. W. Jasper
L. Barr

BRODERICK & BASCOM ROPE CO., ST. LOUIS, MO.

Benjamin Bybee
Charles Hansen
Dan J. Forrestal
Homer Jackson
August Dalwitz
Charles Hanson
Joseph Melcher
John Shelby
Elmer Schrode
Ben V. Zillman
Andrew Schaefer
Lester Stine

THE BUCKEYE TRACTION DITCHER CO., FINDLAY, OHIO

W. C. Wadsworth, Sergeant—Camp Sherman
John Faithful—Camp Sherman
A. C. Klein—Somewhere in France
Gold Rimer—Somewhere in France
P. H. Wolfrom—Camp Sheridan
Garrett Casterline—Camp Upton
R. H. Casterline—Kelley Field, Texas
Floyd Farmer—Died in Service
J. D. Patterson—Camp Sherman
Myles Gelwicks—Killed in Training

W. F. Clingerman
Floyd Firestone
E. Montgomery
J. L. Shafer
A. C. Kaiser
C. L. Schlaak
Raymond Slupe
Arthur Abbott

DIDIER-MARCH CO., PERTH AMBOY, N. J.

C. L. Joly, Capt. of Engineers, Rainbow Division.
T. J. Muller, Private, Ordnance Department.

CHARLES ENGELHARD, NEW YORK, N. Y.

A. L. Terry, First Lieut. Assigned to the 55th Pioneer Infantry, located at Camp Wadsworth, Spartanburg, S. C., when last heard from.

E. S. Newcomb, 1st Class Musician, 4th Regiment Band, U. S. Naval Training Station, Pelham, N. Y.

E. M. Theise, Seaman, U. S. N. R. Station No. 6, Cropsey Ave. and Bay 17th St., So. Brooklyn, N. Y.

LINCOLN ELECTRIC CO., CLEVELAND, O.

G. C. Smith
Taylor
Shanks
Ward
Burger
Knox
Boehnlein
Friedel
Burns
Condrath
Leopold
Morgan
Kinkead
Hawk
J. Williams
Ferguson
Call
Carlson
Marble
Bede
Preiter
R. Williams
Doremus
Fay
Smythies
Reed
Brinkmar
Heisler
Ross
Jarnisch
Eckert
Lusher
Thomas
Funk
Knoble
Bing
Sonnagh
Kacak
Webster
Lincoln
Gilchrist
Morrison
Winer
Lowry
Noonan

Among these Mr. Taylor, Mr. Bing and Mr. Knoble are in the Aviation Service as Aviators.

Mr. Shanks is also in the Aviation Service.

Mr. Hawk is Second Lieutenant in the Ordnance Department, stationed at the Grill Co., Philadelphia.

R. E. Kinkead is Lieutenant in the U. S. Navy, and is assigned to Battle Ship South Dakota.

Mr. Ward is Second Lieutenant in the Heavy Artillery.

Mr. Marble is in the Civilian Service of the Truck Department under Mr. Christian Girl.

Mr. Lowry is in the U. S. Naval Reserve Corps but has not as yet been assigned to any ship.

Mr. Webster and Mr. Thomas are in the Red Cross Division, Mr. Webster being in France at present.

Mr. Smythies, formerly of our Toronto Office is now on patrol duty chasing submarines somewhere off the coast of England.

Mr. Barry, also of our Toronto Office, is at the present time taking training as Aviator in the Royal Flying Corps near Toronto, Ont.

Mr. Fay is in the Truck Division in France.

Mr. Gladden Lincoln, son of our President, is also serving as Mechanic, and is stationed in France.

THE MATHEWS GRAVITY CARRIER CO., ELLWOOD CITY, PA.

S. L. Smith, Company E 16th Regt. Eng. "Ry." Headquarters A. E. F., P. O. 706—via N. Y.
R. Rollins,. 199th Aero Squadron, A. E. F. via N. Y.
C. A. Paul, Company F—3rd Depot Bu. S. C., Fort Leavenworth, Kansas.

Wilmer Schweinsburg
Merwin Clark
Jonathan Allison
Nick Ackonomos
J. L. Boyd
E. M. Shaner
Loring Wise
Earl Baker
Perry McClintock

PRICE ELECTRIC CO., CLEVELAND, O.

Private D. C. Martin, 192nd Aero Squadron, Wichita Falls, Texas.

THE SANDERSON-CYCLONE DRILL CO., ORRVILLE, OHIO

Six employees have joined the service. Among these is Leo J. Daly of the New York office, who is now connected with the Medical Reserve Corps. Also M. B. Garber, Jr. an executive of the company in charge of sales and advertising accepted for the Aviation Corps—now awaiting call to service.

SAUERMAN BROTHERS, CHICAGO

F. B. Guilfoil—Sales Engineer—Captain of Company C 108th Engineers, Camp Logan, Houston.

THE WATT MINING CAR WHEEL CO.,
BARNESVILLE, OHIO

Erny Twinem—Camp Sherman
Wm. Powell—Navy
Herman Eagon—Submarine Serv.
Jno. McCracken—Aviation
Clarence Mills—Navy
Edw. Renner—Kelly Field, Texas
Chas. Hines—Navy
Harold Hardesty—France
Willard Burkhead—France
Mike Pierce—France
Geo. Pierce—France
Alden Warfield—France
Walter Greenwood—Camp Sherman
Herman Carpenter—Camp Sherman
Harley Jackson—Camp Sherman
Albert Sayers—Camp Sherman
Albert Schuman—Camp Sherman

Chauncey H. Tipton, Advertising Manager, has been accepted for the Aviation Service and is awaiting call.

Other companies whose names are familiar to clay products manufacturers are supplying equipment to the Government, which is used directly in connection with the War Program, and the Government has made the employees of these concerns immune from War Service. The Brown Instrument Company, of Philadelphia, is one company that has been placed in deferred classification.

BAIRD MACHINE & MANUFACTURING CO.,
DETROIT, MICH.

R. F. Jarrard, Private, 10th Co., 3rd Battalion, 160th Depot Brigade Bldg. 470, Camp Custer, Mich.

Chicago Brickmakers Pool Production

With the permission of the government, the Illinois Brick Co., Chicago, has arranged with several other brick concerns in that city to produce common brick for them in order to further the fuel conservation movement. This is in line with the spirit of the times and with the curtailment order issued some weeks ago by Dr. Harry A. Garfield.

With its own activities, more than ninety per cent. of all the common brick manufactured in Chicago will hereafter be produced by the Illinois Brick Co. It is believed this percentage may be increased to include the entire production of brick in Chicago.

This movement was undertaken by the company under the general recognized theory that it is more economical to operate a plant continually insofar as the use of fuel is concerned than to run it intermittently.

The plan is also thought to be of much advantage to both the government and the brick manufacturers by enabling the combined production to take up the slackening in operation which was bound to follow the fuel administration's recent order limiting the production of common brick to fifty per cent. of the average during the past three years.

Normally, common brick produced in Cook County approximates eight hundred million a year and the company will have little difficulty in producing all needed in Chicago and the surrounding territory.

In addition to combining the production part of the brick business in Chicago, arrangements have been made for consolidating sales forces.

* * *

A. C. S. Summer Meeting

The summer meeting of the American Ceramic Society will be held in Zanesville Ohio, June 25 to 28, inclusive.

The Zanesville district offers the visitor a great diversity of clay industry, including some of the most notable plants in the country. The larger factories have tunnel kiln installations and other modern developments of special interest to clay workers.

Among the plants to be visited are those of the Ohio Pottery Co. (chemical porcelain), Roseville Pottery Co. and Brush-McCoy Pottery Co. (art pottery), The American Encaustic Tiling Co. and Mosaic Tile Co. (floor and wall tile), The Burton-Townsend Co. (paving brick), Ransbottom Brothers (stoneware), A. E. Hull Pottery Co. and Crooksville China Co. (table and chinaware), Ludowici-Celadon Co. (roofing tile), and the Ohio Brick & Stone Co. (fire brick).

The region is also famed for its scenic beauty, with which is blended opportunities for most interesting geological and archeological observations. Plans for enjoyment of these features have not been overlooked, and the program will include a trip by steamer on the historic Muskingum, known as the Hudson of the West. There will also be an auto trip over the National Highway to the famous Indian flint quarries and the mound builders' works, which are among the most remarkable examples of these ancient ceramic operations in existence.

Schedule of the meeting will be mailed to members. For detailed information address the chairman of the summer meeting committee, Forrest K. Pence, care of American Encaustic Tiling Co., Zanesville, Ohio.

* * *

New England Section Meeting

The New England Section of the American Ceramic Society held its meeting on May 18 at the Engineers' Club of Boston, Mass. A dinner was served at the club in the evening and A. V. Bleininger of the United States Bureau of Standards attended as the principal speaker. Mr. Bleininger's subject was "Ceramic Industries and Warfare." There is no doubt but that everyone present profited by this lecture as Mr. Bleininger covered every new line of research in ceramics, which has its source as a result of the world war.

Mr. Bleininger with fifteen others, toured to Boston from Worcester, arriving in time for the meeting, after which he left for Pittsburgh.

Ross C. Purdy, of the Norton Co., Worcester, Mass., C. H. Kerr, of the American Optical Co., and Wm. H. Grueby, of the Grueby Faience & Tile Co., Boston, Mass., were also present at this meeting.

* * *

There has been a considerable increase in the exportation of clay from New Jersey to manufacturers in other states during the past year, according to the announcement from the state department of conservation and development. It was stated that many communications are being received by the department with regard to the miners and shippers of clays of various kinds in this state as well as information on smooth plastic clay of a very high heat resisting quality.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Take Care—Practice Safety

"Menomonie-Ole Skouge was seated on the top of a pug mill at one of the city brick yards when some one started the machinery. The mill grinds up the clay and is full of revolving steel knives. Skouge's legs were drawn in and he was ground like sausage meat." The above is from a newspaper clipping taken from the Milwaukee (Wis.) Free Press and emphasizes the fact that safety measures can never be made too stringent to avoid accidents. We do not know the details of the above accident but it is certain that an accident of this nature does not happen unless there is a great lack in care. Safety, devices, signs, and lectures should be given more attention and consideration; we cannot afford to lose a single man these days.

* * *

Heat Losses Due to Radiation

The loss of heat thru radiation is a quantity which is almost impossible to determine accurately in practice. The following figures appear to be a fair average.

A four and one-half inch brick wall loses .45 B.t.u. per hour for each square foot of surface, and for each degree Fahrenheit difference in temperature between the two sides of the wall. Similarly a

9 -inch wall loses .36 B.t.u.
13½-inch wall loses .28 B.t.u.
18 -inch wall loses .25 B.t.u.
Window glass .75 B.t.u.
Door of 1-in. board .47 B.t.u.

Stone walls need only to be half the thickness of brick walls to retain the same amount of heat within the walls.

Using the absolute loss by radiation from a wood surface as unity, the following are the relative losses from other substances:

Iron	291	Concrete	4
Lead	145	Sand or earth	2½
Glass	8	Sawdust	1¼

From the above figures it is seen that for a kiln on high heat, say 2000 deg. Fahr., the loss of heat thru radiation would amount to from 300 to 500 B.t.u. for each square foot of surface for each hour. Taking into account the enormous surface exposed it will be seen that there is an immense quantity of heat lost thru radiation from kilns. The loss of heat really increases with the increase of temperature so in all probability the real loss would amount to considerably more than the figures mentioned.

* * *

Home-Made Pipe and Drilling Vise

A handy vise that can be made by any engineer who is not in a position to purchase one is shown in the accompanying illustrations. The grip on pipes should be, as much as possible, around the entire cylindrical surface, otherwise the pipe is easily scored. The device described was built in three sizes. The largest size, fitted with brass jaws, is used by gripping small pipe or rods for various light operations. When mounted on a block, Fig. 2, it serves as a handy vise for drilling round stock. It can be attached directly to the bench, Fig. 1, or gripped in the vise, Fig. 3, for threading, or clamped to a drill-press bed for drilling holes in round stock, Fig. 4. The vise is composed of two plates, Plate A, Fig. 1, is made of angle iron for fastening to a block or bench; B is of steel plate of the same length and can be used for fastening to a bench or for being gripped

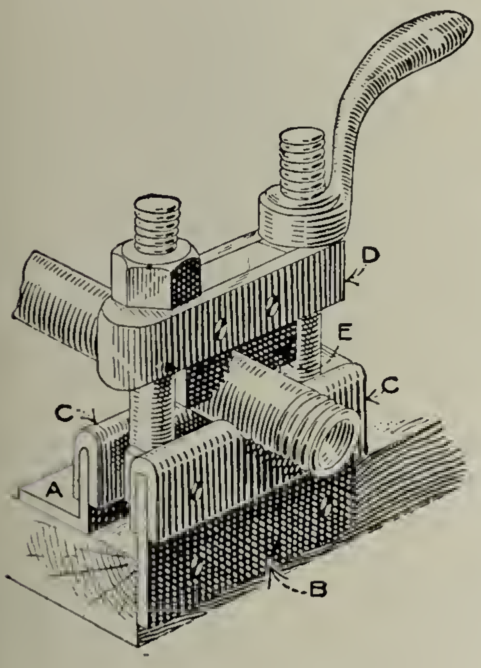


Fig. 1. Showing Details of Construction.

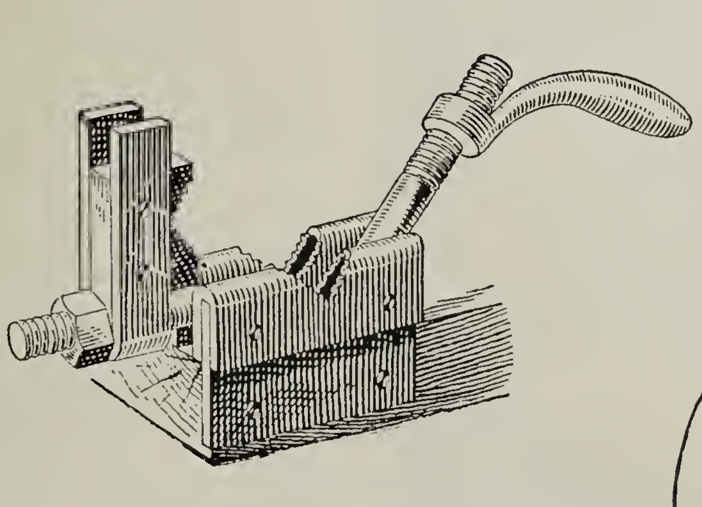


Fig. 2. Vise Shown in the Open Position.

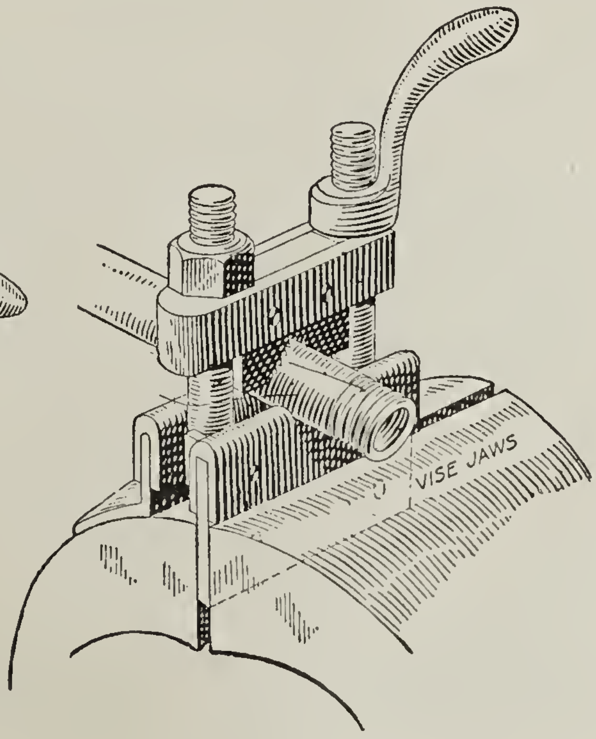


Fig. 3. Clamped Between Vise Jaws.

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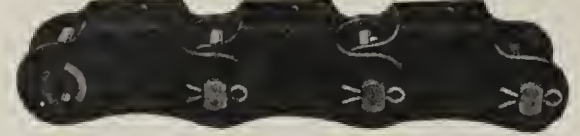

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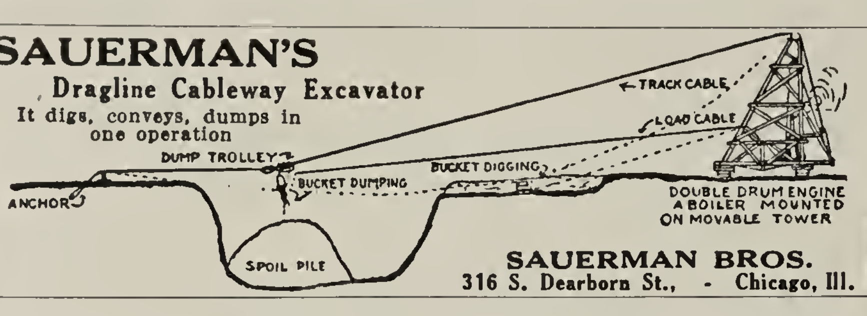
It digs, conveys, dumps in one operation



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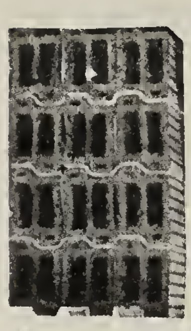

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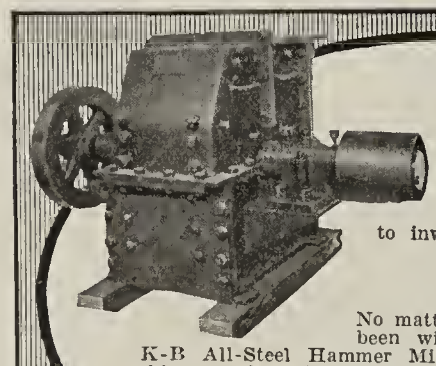

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between jaws of a bench vise. Both pieces are reinforced on the upper edge by a piece of steel, C, riveted on. In the center of these assembled plates a V-shaped way is sawed, which is provided with fine teeth for gripping purposes. The movable jaw D is made from a U-shaped strap, in the center of which is riveted a solid block E. This upper jaw is guided between the two lower jaws by means of a bolt pivoted between them, as shown. A handle nut is also provided for quick action in opening or closing.—*J. A. Lucas, in Power.*

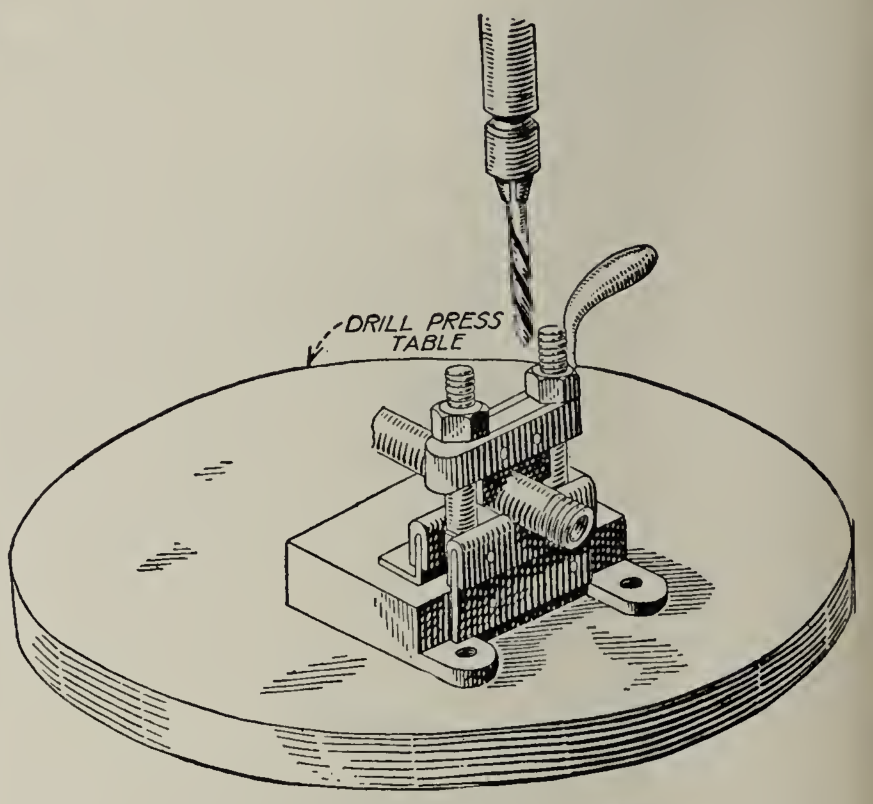

Fig. 4. Vise Clamped to Drill-Press Bed.

⁂

Lubricating Materials for Steam Engines

Most lubricating greases are made by treating an oil, grease, or fat with soda or lime, and then adding a large proportion of the original fat to the composition to obtain a sufficiently stiff and greasy mass. Many commercial greases are adulterated with "filling" materials, such as chalk or heavy spar, which give a spurious stiffness to them. The following are the chief oils and fats used for lubricating:

Palm oil, used for the best greases. The more acrid qualities are in most demand, as they combine with a larger proportion of alkali.

Tallow of very low grade is frequently used.

Foot oils of all kinds are in great demand.

With high-pressure steam animal oils and fats should not be used, because they become decomposed into stearic and other acids and so attack the iron of the cylinders. Mineral oil preparations alone should, therefore, be used with high-pressure steam.

Rosin is one of the most common materials. It is chiefly used in conjunction with one-third of its weight of lime. Being very repellent to water, this material is particularly suitable for outside or exposed bearings.

Anthracene oil which is a coal tar product, when mixed with lime, forms a thick but oily grease. It is very good for lubricating heavy machinery.

Petroleum oils and greases are of variable composition, ranging from comparatively thin oils to thick, tarry cylinder oils and greases of a vaseline nature.

Identifying Pipe Lines

Many plants have pipe lines for so many different kinds of service that it is difficult to identify them without the aid of a piping layout. This, of course, takes time—it is much too slow for use in an emergency or when a gang of repair men are waiting to do a repair job.

Of course, painting pipe lines would do away with this difficulty, but it is not always feasible. In general it is preferable that piping be painted to harmonize with the color scheme of the room. In a boiler room, of course, a plain dark durable color is desirable, so that dirt will not show unduly. Generally any other color would soon be covered up.

A plan has been suggested and is, in fact, in use in many plants whereby the flanges on the pipe line are painted with distinctive colors. The following is a painting system which has been found very satisfactory:

Fire Protection	Sprinkler system Fire line	Venetian red Vermilion
Steam	High pressure Exhaust system Heating system	White Buff Green
Water	Fresh water, low pressure	Blue
	Fresh water, high pressure boiler feed lines	Blue and white
Oil	Delivery and discharge	Brass or bronze yellow
Pneumatic	All pipes	Gray
Gas	City lighting service Gas engine service	Aluminum Black and red flanges
Fuel Oil	All piping	Black
Refrigerator system	White and green stripes alternately on flanges and fittings, body of pipe being black.	
Electric lines and feeders	Black and red stripes alternately on flanges and fittings, body of pipe being black.	

Perhaps it would be a good plan to talk to the head of your maintenance work to see how much time is wasted in tracing out pipe lines. Tracing them out once for all and identifying them by some such code as this may not only repay in less maintenance expense but also save time in an emergency when minutes are precious.—*Factory.*

⁂

Melting Points of Different Metals

	Deg. Fahr.		Deg. Fahr.
Aluminum	1,400	Iron (cast)	2,450
Antimony	810	Iron (wrought)	2,912
Bismuth	476	Lead	608
Brass	1,900	Platinum	3,080
Bronze	1,692	Silver (pure)	1,873
Copper	1,996	Steel	2,500
Glass	2,377	Tin	446
Gold (pure)	2,590	Zinc	680

⁂

J. W. Hunt of Holstein, Ont., has been hard hit by the war. His two sons have donned the khaki and the plant which has been closed, was sold at auction on May 10.

⁂

The Mercer Pottery Co., Trenton, N. J., has subscribed $1,000 to the Second War Fund of the American Red Cross.

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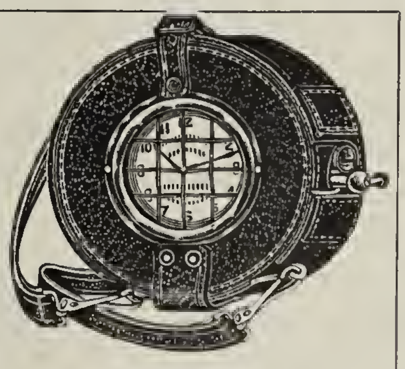

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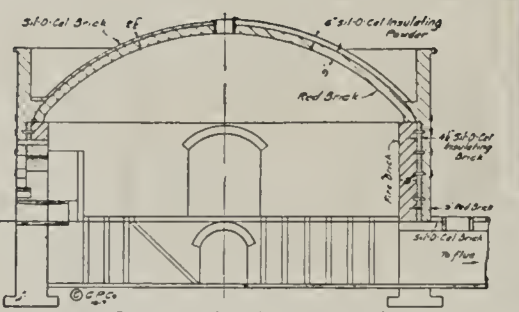
INSULATING BRICK AND POWDER



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is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.

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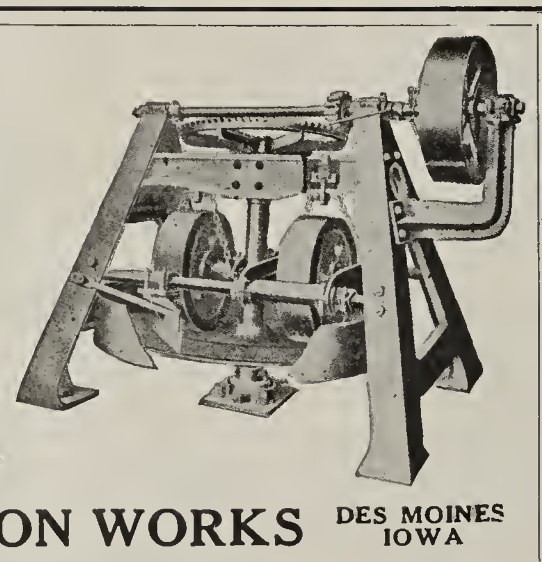


Write for Prices

EAGLE IRON WORKS DES MOINES IOWA

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

K. P. Grahn, of the Louisville (Ky.), Fire Brick Co., has gone to Grahn, Carter County, Ky., where he will spend a few days on business.

J. T. Howington, head of the Coral Ridge Clay Products Co., Louisville, Ky., is expected back shortly from a trip to Washington, which took up several days.

Norman and Wilfred Davies, sons of the late Robert Davies, proprietor of the Don Valley Brick Co., Toronto, Ont., have joined the colors.

J. E. Morrissey, of the Cleveland (Ohio) Builders' Supply Co., was a recent business visitor in Columbus. He was looking over the face brick situation in central Ohio.

C. A. Heshour, formerly with the Cleveland (Ohio) Vitrified Brick Co., left recently for Oklahoma City, Okla, where he is looking over the brick and clay products situation with a view towards establishing a factory or selling agency.

Harrison Westcott, an employe of the Rutland (Vt.) Fire Clay Co. was seriously injured recently when he was run over by the mixer. He had two ribs broken and sustained other hurts.

H. S. Hamilton, president of the McArthur (Ohio) Brick Co., who lives at Grandview, near Columbus, has returned from a trip to the army camp at Macon, Ga., where his son is stationed.

Addison Harbster Gery, whose father is well known in brick manufacturing circles in eastern Pennsylvania and New York, will be married on June 8, to Miss Elizabeth Henrietta Freesenius, of New Haven, Conn. After the honeymoon, the couple will reside in Reading, Pa.

Fred Felgenhauer and John Dubre, employed in the coal mine operated by the Western Brick Co., Danville, Ill., had a narrow escape from death on May 16, when they were caught between a broken "trip" of coal cars on the incline over which the coal is hoisted. Felgenhauer sustained serious injuries and the right hand of Dubre was badly crushed.

Red Cross work has taken the attention of many of the brick men during the past week. Mr. Gwynn of N. Clark & Sons, San Francisco, was one of the helpers in the movement and J. T. Robers of the Stockton (Cal.) Fire & Enamel Brick Co., devoted nearly all his time to the work. All the local manufacturers were generous in their donations to the cause.

Frederick C. Davis of Gladding-McBean & Co., San Francisco, Cal., delivered a lecture on "The History, Manufacture and Development of Architectural Terra Cotta" before the students of the technical department of the Humboldt Evening High School in that city recently. He related some interesting incidents of a recent trip to Japan and spoke at length of the various Japanese building methods.

James Rhoades, Walter Walker and Thomas Bentley, formerly connected with the Mercer Pottery Co., Trenton, N. J., and now with the 67th Battery, Canadian Field Artillery, Toronto, Ont., are now on their way to France. Charles Smith, formerly with the Delaware Pottery Co., Trenton, is also in the same company, and anticipates sailing for France at an early date.

At Cannelton and Tell City, Ind., Henry Clements, manager of the Cannelton Sewer Pipe Co., was an active worker in the Red Cross campaign that started on May 20. Both these live towns went "over the top" and Mr. Clements, who is the fuel administrator of Perry county and who has been active in all patriotic movements, is largely responsible for this achievement.

Robert Neale, chief engineer of the W. S. Dickey Clay Manufacturing Co. of Kansas City, Mo., was laid to rest in Toronto, Ont., recently. The late Mr. Neale was with this company for thirty years and had charge of the mechanical equipment of their eight sewer pipe plants. Both Mr. Neale and Mr. Dickey were Canadians who at one time operated the Dickey & Neale Co., iron founders, in Toronto. W. S. Dickey, of Kansas City, and George Tefft, secretary of the Clay Products Association of Chicago, who was formerly associated with Mr. Neale in the Dickey company, were in attendance at the funeral at Toronto.

Thomas Carey, of the Carey Brick Co., L. T. Binyon and J. A. Hogan, of the Kimbell Brick Co., Chicago, Ill., recently made a trip to Ohio, resulting in the purchase of a three thousand acre tract of land at Oreton, Vinton county, Ohio, containing large deposits of coal, shale, fire clay, and oil. Steps have already been taken to develop the coal, and as Mr. Binyon and Mr. Hogan have met with success in the production of fire brick it is fair to presume that they will probably develop the fire clay deposits also. Other interested parties are: L. W. Gaddis and C. F. Harrison, of the Gaddis-Harrison Brick Co., and Messrs. Hamilton, Sprague and Pilcher, of the McArthur (Ohio) Brick Co.

California

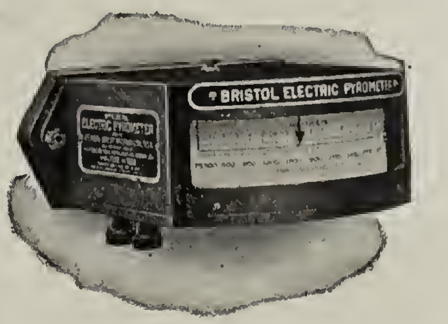
Gladding, McBean & Co., Lincoln, Cal., have just secured a contract to supply $4,125 worth of terra cotta for alterations in progress in the Union National Bank at Fresno, Cal.

N. Clark & Sons, San Francisco, Cal., have recently closed a contract for the architectural terra cotta for the Pacific States Telephone building now being erected in Oakland. The contract calls for between $4,000 and $5,000 worth of terra cotta.

The first carload of terra cotta to be used in the construction of the new court house at Klamath Falls, Ore., has just been shipped by the makers, N. Clark & Sons, of San Francisco, Cal. Five or six more carloads will be shipped in the near future.

It is announced that E. Alzado and associates, owners of deposites of magnesite on Magdalena Bay, Lower California, have decided to move their factory from Porterville to Los Angeles. A site on the harbor is being sought and it is said that a $50,000 factory for calcining magnesite will be built at once.

Quite a few contracts for new buildings in San Francisco, among them warehouses and other buildings of the preferred class, are being held up by the proposed builders, until they can see what is going to happen. Most of these will, without doubt, be built at a later date, when the business



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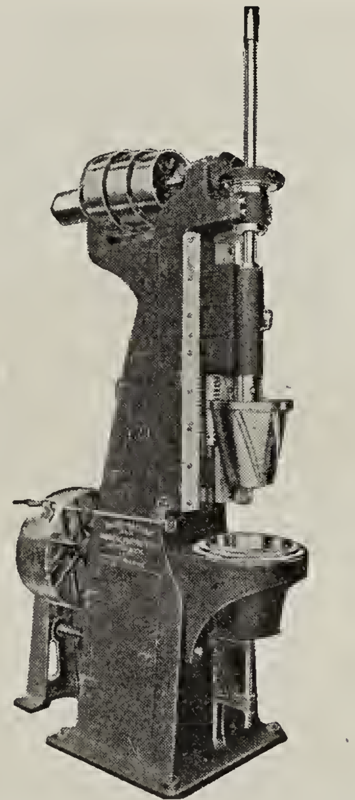

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The Beighlee Electric Co., Cleveland, O.

world has more nearly adjusted itself to the new conditions forced by the war.

N. Clark & Sons are progressing slowly but surely in the rebuilding of their plant at Alameda, Cal., which was destroyed by fire last year. Contract has just been let for the erection of a brick power house on the grounds and this will be the first building completed. It is doubtful if the works will be ready to run at full capacity before the end of the present year.

Plans have been completed and construction work will begin early in June on the Remar Baking Co.'s building, Oakland. The building will be erected in three units to cost a total of $150,000, the first two units to be built at once. The building is to be of brick, and bids are now being submitted by several brick firms. It is stated that the builders of the new bakery are San Francisco brewery men.

The United Material Co., of San Francisco, Cal., has just been awarded a contract to furnish all the brick for the Old Homestead Bakery building which is about to be erected in that city at a cost of $200,000. The new bakery will be one of the most attractive buildings of its kind in the country. Practically the entire interior will be lined with enameled brick. The contract of the United calls for 100,000 enameled and 50,000 fire brick, besides a large amount of building brick, the exact quantity of which has not yet been figured.

Announcement has just been made by the State Board of Control at Sacramento, Cal., that construction of new state buildings in Sacramento, and other construction work, except highways and work necessary to protect public health or as a measure of safety, will be postponed until after the war. How far this order is designed to extend has not yet been made clear. At N. Clark & Sons it was stated that they did not believe it referred to work already under construction, such, for example as the great Agricultural building which is being erected in Sacramento. This firm is busy preparing the architectural terra cotta for the building and has received no notice that it will not be used at once.

The labor situation in the brick and clay industry of California is beginning to demand the serious attention of the manufacturers. Most of the plants have already granted an increase to take effect June 1, and many believe that another increase will have to be accorded in September, if the yards are to attempt to hold their skilled men. As one manufacturer puts it, the business is confronted by competition for man power, and this is keener than any competition for business that they have met. Some of the yards are doing everything possible to decrease their overhead and for the past year or more they have been introducing labor-saving machinery wherever possible. The man with the wheelbarrow is already a thing of the past in some yards and his place has been taken by the electric elevator truck. It is predicted that if the competition for labor continues within the next two or three years, all the yards will have to adopt the electric elevator trucks and other labor-saving machinery.

The order of the fuel administrator is regarded in California as the result of a misunderstanding of the conditions on the Coast, where there is no necessity of saving coal. And as there is no need of such saving on this Coast the cutting down of the brick production thru the order bears particularly hard on the Coast brick men. The question is already agitating the minds of some of the manufacturers as to whether or not it is worth while to continue the struggle under existing conditions. All are desirous of complying with government orders, but some of the manufacturers feel that the business of 1919 would in any event be less than 50 per cent. of a normal year, and they believe that it would have been simpler for the manufacturers to have worked out regulations among themselves. Under present conditions, some of the manufacturers will have to quit, and some manufacturers think that it would not be serious to the business interests if all the manufacturers decided to stop work. A better solution might be for the government to step in and say who shall quit and who shall not, rather than leave it to the manufacturers themselves. Every manufacturer desires to be loyal to the government, yet not unnaturally each feels that he knows more of local conditions than government officials who make blanket orders for the entire United States. No one who has been in the common brick manufacturing business in this vicinity has any money to lose, as the brick business has been one of very small profit for the past ten years. While these are the opinions expressed by a considerable group of local brick makers, others say that there will be no shutdown in any plant until its supply of fuel is exhausted, but that in all likelihood August will see the business at a standstill so far as making brick is concerned. This does not apply, of course, to the makers of fire brick and the others excepted in the general fuel order.

Colorado

The Denver (Col.) Fire Clay Co., one of the oldest firms in Denver, which has been in business for more than forty years, will be reorganized as a result of the purchase of all interest in the firm held by Wm. W. Chase, Jr. by Mrs. Leonora Bosworth, widow of the founder of the company, and her three sons, Arthur H., Harold O. and Capt. Robert B. Bosworth. Harold Bosworth will be president of the Denver Fire Clay Co. and J. Claire Evans, vice-president. Herman Landenberger, who has been connected with the fire clay concern for twenty years, will retain his position as secretary-treasurer and George W. Lindsay will be appointed factory superintendent.

Delaware

Wilmington (Del.) brick-makers have been subject to inquiry lately on the part of the state fuel administrator as to the amount of fuel they are using in their plants. Fifty per cent. production has been fixed as the limit for the time being. None of the brick-makers, however, are reaching that quantity, and it is believed that no change in plan of operation will be necessary. The demand has been materially curtailed because of the general war conditions, while fuel and everything else that enters into the manufacture of brick has been materially increased in cost.

Illinois

The White Hall (Ill.) Sewer Pipe & Stoneware Co. has purchased the property of the White Hall Railway Co. for a consideration of $80,000.

Indiana

One of the large plants of the Standard Brick Manufacturing Co., Evansville, Ind., is running on about one-half schedule; another plant is closed down, while the third plant is being operated a few days a week. John Andres, secretary-treasurer of the company says he is not looking for a very active trade until after the close of the war.

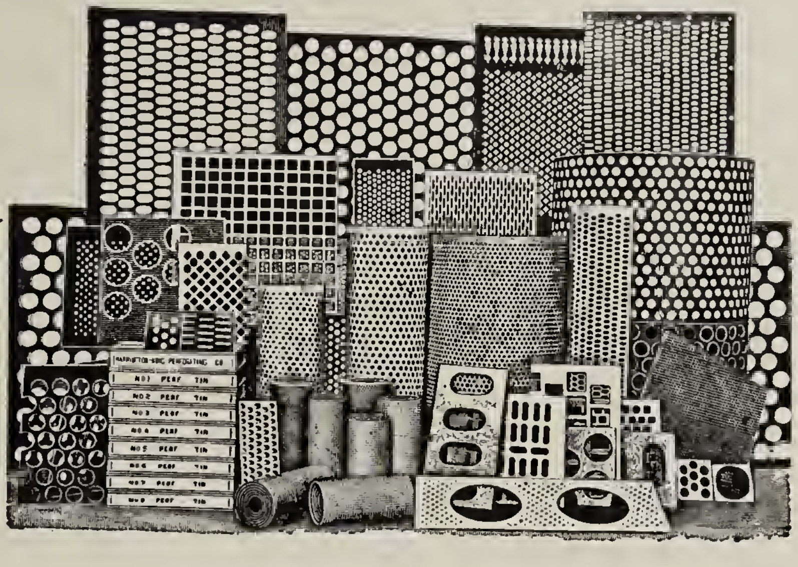
Some brick manufacturers in southern Indiana are predicting that there will be a shortage of brick before the end

Perforated Steel Screens
Of Every Description

For Screening Clay, Shale, Sand,
Gravel, Stone and Cement

No Other Screens Will Give You Equal Capacity,
Durability and Satisfaction

The Harrington & King Perforating Co.
635 N. Union Ave., Chicago, Ill.
NEW YORK OFFICE: 114 Liberty St.



Your Fortune For Coal Or Use Canton Shaking Kiln Grates Which?

One of the very prominent refractory men says: "It is simply beyond my comprehension why otherwise good plants still use old methods. We are saving over 25% of our fuel with Cantons, amounting to thousands of dollars each season.
Get our bulletins.

The Canton Grate Co.
Woodland Ave., Canton, Ohio
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SAY "I SAW IT IN" BRICK AND CLAY RECORD

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WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT
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Rollin's Barium Carbonate

It Eliminates Scum

This is the one big reason that you should use it in your clay mix. If there is any one way in which your ware can be improved, you should immediately adopt the method, for Brick must hold up its good reputation. Rollin's Barium Carbonate provides the way. Many plants use it.

The Rollin Chemical Company, Inc.
Charleston, W. Va.

WHO
SAVES
SERVES

KEYSTONE

Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

of this year, as many of the plants have not started up as yet. Building operations in Evansville and other towns in southern Indiana however, have not shown any signs of picking up during the past month. While some building is being done, it is far below that of last season.

The case in which the state highway commission act was declared unconstitutional by the Hamilton County circuit court has been formally appealed to the Indiana supreme court. With the appeal, there was filed a joint agreement asking the supreme court to advance the case. Pending the decision in the matter, work on all the state highways has been discontinued.

Another new brick building is to be erected at Jeffersonville, Ind., as a warehouse for the Government depot there, according to a recent announcement from the war department at Washington. The new building will be erected in the locality known as Camp Bass, a considerable distance from the main depot. It will be built of brick and tile with concrete floors and will be 400 feet wide and 800 feet long.

Clay products manufacturers thruout Indiana are feeling more relieved since the issuance of Provost Marshal-General Crowder's "work or fight" order. They are of the opinion that the new order will have a far reaching effect toward filling up the depleted ranks of useful endeavor thruout the state. The labor shortage in Indiana in recent months has been acute and the order, it is believed, will bring a much needed relief.

There has been little or no improvement in trade with the brick manufacturers in southern Indiana during the past few weeks and, in fact, little change in the trade situation is looked for during the present season. Some of the brick yards in southern Indiana, southern Illinois and northern Kentucky are closed down and it is not known when they will resume operation. Brick manufacturers say that taking the year as a whole, they are not looking for as large a volume of business as last year. Some of the plants are being operated two, three and four days a week.

The stopping of all public improvements at Evansville, Ind., upon order of Mayor Benjamin Bosse, means considerable loss to the brick manufacturers of that city, as several brick streets had been planned for this summer. All contracts that had been let before the order of Mayor Bosse was issued, will be carried out to the letter, but no new contracts will be let this year. Many of the men who were employed doing street work in Evansville have gone to other cities and some of them have found employment in factories that have government contracts.

The federal government opened an employment bureau in Evansville, Ind., several weeks ago and since the bureau started, several hundred workers in all lines have been sent out to the city. Manufacturers in all lines report a serious labor shortage and with hundreds of young men going to the army from time to time and the labor bureau sending out large numbers of working men to other points, it is feared that by fall the problem of getting sufficient labor will become a serious one. Farmers in southern Indiana are offering $5 a day and board to men to harvest the wheat crop and it is feared even at these high wages many of the farmers will have difficulty in getting sufficient labor.

The three large potteries at Evansville, Ind., are being operated on pretty fair time and trade has been good. Prospects for summer and fall trade are said to be very good. Freight embargoes and the car shortage, as well as the labor shortage problem have affected the Evansville plants to some

extent. The car shortage is not as serious, however, as it was a few weeks ago and manufacturers are of the opinion that the situation will improve from time to time. Pottery manufacturers say they are not surprised at the new advance in freight rates as they had been expecting this move on the part of Director-General McAdoo for some time past.

Kentucky

A. E. Livingston, of the Louisville (Ky.) Builders' Supply Co., has been landing some nice city jobs for various kinds of building supplies, and a few fair brick orders and orders for sewer pipe. However, business has not been anything like it should have been under better fundamental conditions, and a larger supply of labor.

Louisville has again done her patriotic duty by both the Liberty Loan and the Red Cross campaigns. In the Liberty Loan campaign the city went far over her allotment, and in the Red Cross campaign, in which the city was to have raised $320,000, she over-subscribed the figure by $225,000. The brick men as usual were good supporters of both movements.

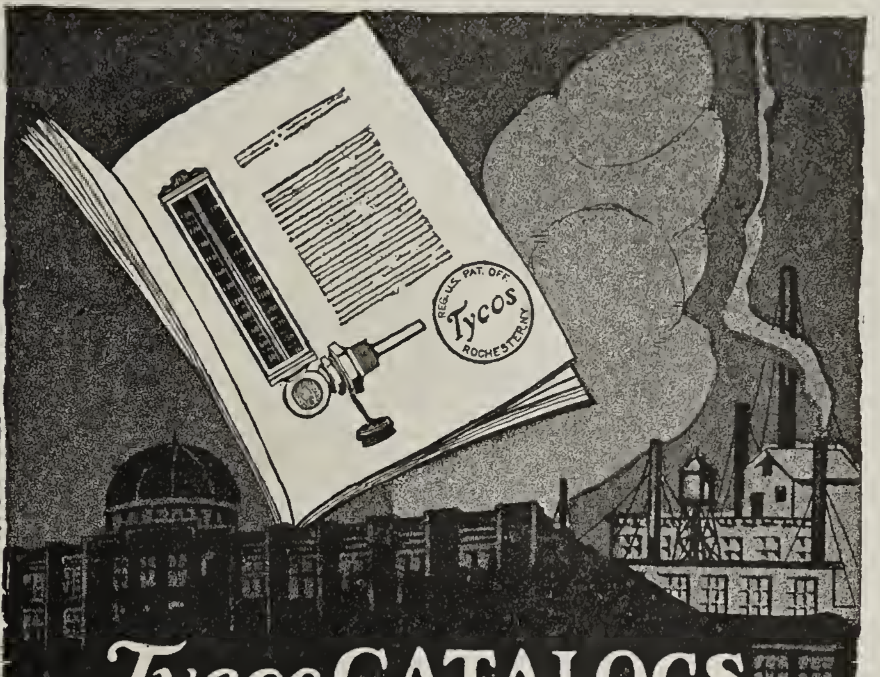
Motor trucks are proving of great advantage to Louisville, Ky., building supply and brick concerns which have been using them, and it is believed that a far greater use will be made of motor trucks within the next year or two. The increased freight rates will result in more hauling to points out in the state that can be reached by road. Kentucky roads have improved materially within the past four or five years, but heavy truck hauling would probably cut them out in a little or no time.

Leo Parsons, of the R. B. Tyler Co., Louisville, Ky., reports a good demand for face brick with that concern, figuring the smallness of building operations this year. However, a number of small dwellings are being erected, and the aggregate business has mounted up nicely. Mr. Parsons reports that the Louisville Brick Manufacturing Association has been meeting weekly, but that nothing of importance has come up at the recent weekly luncheons.

Things have been humming with the Southern Brick and Tile Co., Louisville, Ky., according to T. Bishop, who has been behind on orders for some time past However, the company is rapidly catching up on brick and tile orders. Mr. Bishop reports that locally things are quiet, and out in the state the demand is not as keen as it was six weeks ago. However, the company has business on hand that will keep it going for some little time yet.

The P. Bannon Pipe Co., Louisville, Ky., which for several years has been operating five double teams and two single teams, has purchased and installed two Wilcox trucks, one of two-ton capacity and the other of three and one-half tons. The company also has three autos for its salesmen. In order to have an efficiently operated shop to take care of this fleet of autos the company has secured the services of Tom Joyce of the police department, who is one of the best practical auto men in the city.

The common brick field in Louisville, Ky., is now controlled almost entirely by three plants, these being the Coral Ridge Clay Products Co., the Southern Brick and Tile Co. and the Hillenbrand Brick Manufacturing Co. Five years ago there were half a dozen or more plants in competition. However, the plants of the old Hydraulic Brick Co. were sold or dismantled and dropped out of competition; that of the East End Brick Co. was also dis-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SEND FOR THEM, MENTIONING
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Taylor Instrument Companies
ROCHESTER N.Y.
There's a Tycos Thermometer for Every Purpose

Coal Costs Lowered 10%

GUARANTEED

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Cyclone Boiler Grates

we will guarantee a minimum saving of ten percent. The average ordinary saving is much higher, but one-tenth is guaranteed — you can make it much higher. Write today for details.

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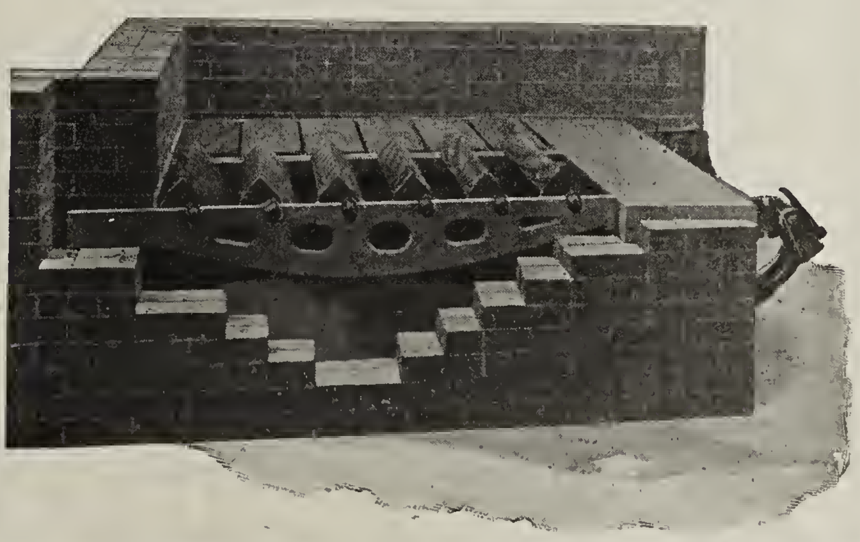
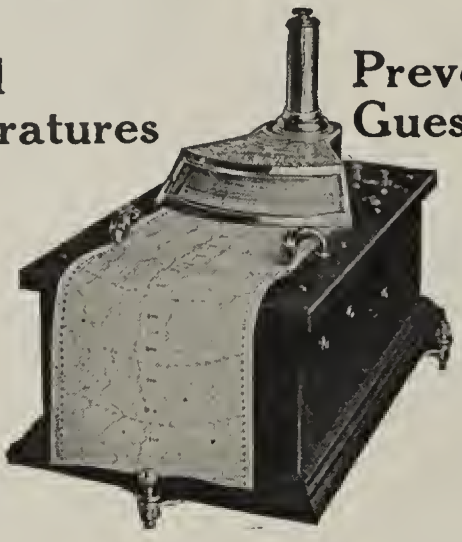
Buffalo, N. Y.



PRICE PYROMETERS

Control Temperatures

Prevent Guesswork



They are so simple in operation that all the kiln men can understand and quickly learn to govern their firing methods by watching the pyrometer. A big coal, labor and time saving is guaranteed. Price of equipment is surprisingly low in cost.

Write

The Price Electric Company
12367 Euclid Ave. Cleveland, Ohio

You can get a higher price for your brick if you guarantee it will be

Scum-Proof

And you can do this with perfect safety by using

R. H. Precipitated Carbonate of Barytes

It neutralizes the salt in your clay so that it cannot appear on the surface of the brick after it gets wet.

But don't accept a substitute—insist on R. H. —the dependable brand.

Write for circular and prices.

The Roessler & Hasslacher Chemical Company
100 William St. New York

Chicago, Ill.
Cincinnati, O.
Cleveland, O.
St. Louis, Mo.
Kansas City, Mo.
San Francisco, Cal.
Philadelphia, Pa.
Boston, Mass.
New Orleans, La.

We carry a complete line of high grade chemicals for the clay industry

mantled, and about eighteen months ago the plant of the Louisville Brick Co. quit business.

Fire brick and other brick manufacturers who are interested in Government orders for hollow tile, fireproofing, brick, etc., are watching with considerable interest a movement of the Louisville, Ky., Foundation and the Louisville Board of Trade looking to the establishment of a war order bureau in Washington. This matter was taken up several months ago but never came to a head. It has since been learned that Louisville factories, while busy on direct or indirect Government orders, could handle a far larger percentage of Government business than they are at this time. Therefore the movement has been revived, and it is believed that a branch office of the million dollar factory fund organization will shortly be established in Washington.

During the past few seasons the Ohio River has not been used to any extent by the brick manufacturers in making shipments of brick in large lots due to the fact that all brick had to be drayed a considerable distance back from the river. Now, however an effort is being made through the Louisville, Ky., Board of Trade to secure proper river terminals for transferring freights from barges and packets to cars, or from rail to river. A committee of the Board has gone to Washington to take the matter up with Director McAdoo in an effort to have the Government furnish the necessary facilties, and also in an effort to have a Government barge line placed on the Ohio.

J. H. Bell, sales manager of the Louisville, Ky., Fire Brick Works, reports that at the present time the plants are operating at capacity at both Louisville and Grahn, Ky., in an effort to catch up on government orders, which constitute more than one-half of the business being handled. The fifty per cent. coal regulation for brick manufacturers will not affect this concern in any way, as it has a priority order for all coal requirements, as fire brick is used in Government work, and in manufacturing Government requirements. Mr. Bell reports that the principal trouble experienced by the company at this time is in securing labor enough to operate its plants. Plenty of cars are to be had and embargoes are not longer affecting shipments. However, it is impossible to secure men enough to operate the plant and handle the shipping end.

The old plant of the Louisville (Ky.), Brick Co., formerly operated by Joe Nevin, passed into the control of the Bannon interests, which operate the former plant of the Bannon Sewer Pipe Co. and the Kentucky Vitrified Brick Co., both now known as plants of the P. Bannon Pipe Co. Joe Nevin, former manager of that concern, is now with the Mason & Hanger interests, the big government contractors, who built Camp Taylor at Louisville, and who are doing some big construction work on the powder plant at Nashville. Mr. Nevin is a superintendent for that company. Altho the plant is in good condition and has been closed down for more than a year, it is ready to start at any time. This may take place at the close of the war when building operations return to normal.

Announcement of the twenty-five per cent increase in freight rates came as a decided surprise to Kentucky clay men, it not having been thought that any increase was forthcoming for three months or more. In a few cases where concerns have been bringing clay from a distance it will materially increase cost of operation, and may hurt them on contracts made without regard to the freight costs.

Again on contracts quoted, f. o. b. certain points, the increase will catch manufacturers. However, the trade has twenty odd days in which to hustle up shipments and get under cover, but it is expected with manufacturers and jobbers in all lines undertaking to get under cover that it will be a hard matter to obtain cars and men for handling rush shipments. It is further expected that the increase in freight rates will give many small town plants a distinct advantage over the large plants which have managed to enter competition at a distance. In some cases large plants, operated at a low overhead cost, thru better equipment, loyal men, etc., have been able to absorb freight rates and still make a better profit on shipped orders than some local plants. However, a twenty-five per cent increase in freight rates will give a district plant a considerable advantage over the concern which has to ship in. It will also result in much longer hauls by auto trucks to neighboring towns. Much speculation is being heard concerning the matter at the present time.

Massachusetts

The Boston (Mass.) Sales Co. has been incorporated to manufacture and deal in fire brick, sewer pipe, sand, gravel, cement and other products. Seth Lee is president of the corporation; Frank E. Ross treasurer, and V. E. Trask director. The company is capitalized at $7,500.

The city of Haverhill, Mass., has placed a contract for furnishing the year's supply of sewer pipe with the D. D. Chase Lumber Co. The company will furnish Portland Stone Ware Co. pipe in two-foot lengths at 58 per cent. off list of 1916; and three-foot lengths at 56 per cent. off 1916 list.

The action of government authorities in withholding approval of plans for the erection of a large new tuberculosis hospital at Waltham, Mass., for the county of Middlesex, has given brick manufacturers an indication of what they may expect in the matter of new building work. Orders for the brick for the county hospital had practically been placed and as it was a sizable order its cancellation was naturally somewhat of a disappointment. The effect of the ruling has also been apparent in temporary holding up of other orders for materials pending a decision as to whether the projects come within the class of essential buildings. While there is much unquestionably essential building in progress and contemplated, the drawing of the line so sharply as to include a tuberculosis hospital among the buildings that can be dispensed with during the war, does not improve the immediate prospects in the brick trade.

Michigan

The Cordery Brick Co. has been incorporated at Monroe, Mich., with a capital of $5,000.

Missouri

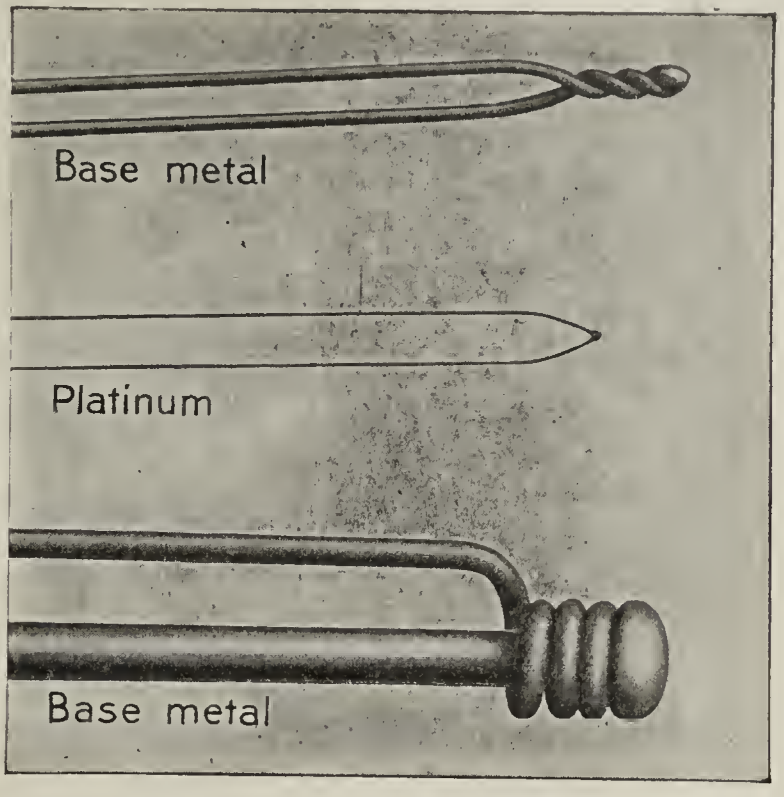
In the last drive, that of the Red Cross, St. Louis, Mo., did not only do what was asked of her but went 50 per cent. over the quota. This has been the case in every patriotic movement aroused by the Government.

The brick situation in St. Louis, Mo., has little prospect of getting material relief so long as the war lasts, brick men point out. Building was never quieter in St. Louis than it is now and has been for more than a year and aside from the construction of a few small business buildings as a small number of apartment houses and flats,

Up to 1300° C. (2400° F.)

This, and NOT the figure given in error in our last advertisement, is the limit under which base-metal thermocouples are more desirable than platinum.

We take this means of correcting any wrong impression, and as the use of base-metal couples affords such important savings to brick and clay plants, we repeat below the text of our previous advertisement.



Thwing pyrometers are furnished with either platinum or base-metal thermocouples, but for the temperatures mentioned above, base-metal **even with much more frequent renewal** is preferable to platinum.

The full size comparison above of typical couples for the same duty indicates the greater ruggedness of even a medium weight base-metal couple. Not only is platinum very much more expensive in first cost, but its contamination and crystallization are gradual with constant failing of accuracy, where with a base-metal couple the accuracy remains practically constant without frequent recalibration.

From the standpoint of service the base-metal couple being so much more rugged is less apt to suffer mechanical injury, yet may be renewed **six to eight** times without equalling the cost of platinum. Moreover, platinum is often stolen because of its high value.

Owing to its higher electromotive force, base-metal permits a more open scale on the indicator for the lower temperatures and therefore the reading is apt to be more accurate.

If you have been under the impression that your high expense for platinum couples is a necessity, let us submit data or send you a base-metal couple for test. The result will be convincing and show you how to make big savings.

THWING
HIGH RESISTANCE MULTIPLE RECORD
PYROMETERS

Thwing Instrument Company
3336 Lancaster Ave., Philadelphia, Pa.

SAY I SAW IT IN BRICK AND CLAY RECORD

When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

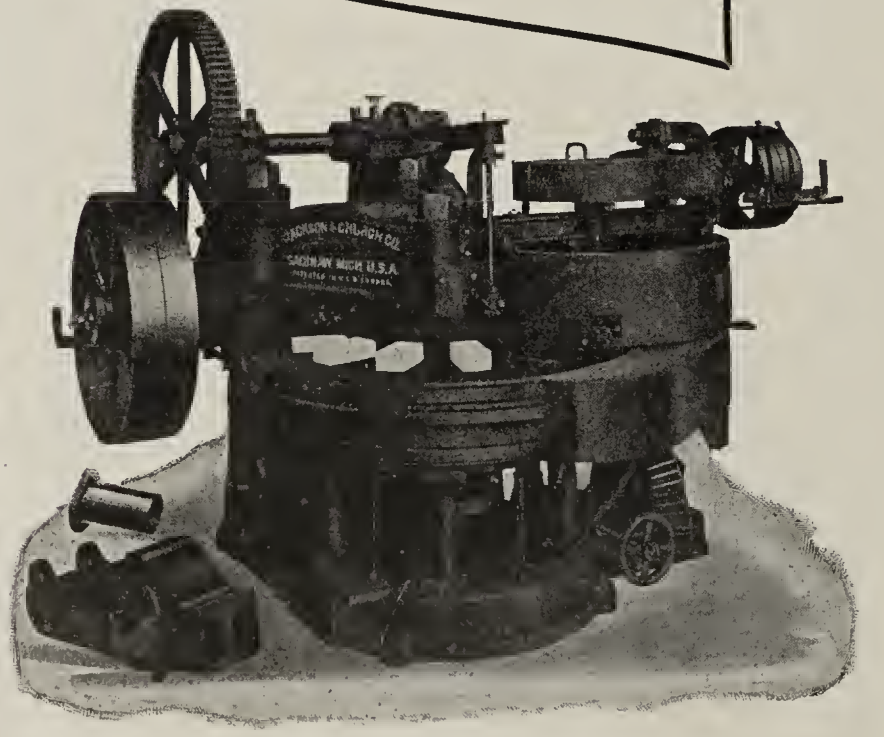
Make SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

there is little happening in the way of building activities. Brick men are hopeful that the Government will see fit to place certain construction here which it has in contemplation. Some express the belief that the Government will take notice of St. Louis and the war work she is doing and will see fit to recognize her as a center deserving some of the business which it might have occasion to place.

Following a vigorous fight waged by newspapers and various civic and commercial bodies of St. Louis, Mo., the Board of Aldermen has killed the bill not long since introduced carrying a measure which would have allowed the Highland Fire Clay Co. to mine clay from under Forest Park, the city's chief pleasure and recreation ground and one of the most famous parks in the United States. Notwithstanding the vast premises belong directly to the people and not to the city or to any one or small group of individuals, the bill was framed with a view of selling the clay mining rights to the Highlands company for a consideration of 20 cents per ton for all clay taken out. St. Louis newspapers launched into a fight against the passage of the ordinance and various bodies looking to the welfare of the people joined in with vigorous protest. For days many columns of newspaper space were devoted to editorials and to news regarding the action the civic organizations were taking in an effort to stop the bill's passage. As a final "direct hit" one man challenged the Board of Aldermen by offering to pay 30 cents a ton for the product in case the city was bound to sell the rights. The defeat which the bill met was by an honest solid vote. Forest Park is one of the most spacious and beautiful reserves which any city in the country can boast of. Forest Park was made the grounds of the St. Louis World's Fair of 1904. Vast sums have been and are still being spent each year toward improving it and it is the pride of all St. Louisans. The taking over of even a few acres and their destruction met with a voice of unanimous disapproval.

Montana

In order to meet the tremendous demand for their products, the Havre (Mont.) Brick Co., of which W. J. Maurer and Ernest Young are the principal owners, have been forced to enlarge their plant and install new machinery. Work on the new kilns, each having a capacity of 90,000 brick, is being rushed to completion, in order to fill a number of large orders now on hand.

New Jersey

About forty employes in the kiln department at the plant of the General Ceramics Works, Keasbey, N. J., went out on strike on May 20. The men demand an increase in wages from thirty-four to forty cents per hour.

The plant of the Homestead Brick Yards, Inc., near Paterson Plank Road, North Bergen, N. J., covering about 516x 1,981 feet on the west side of the New York, Susquehanna & Western Railroad, has been sold to Frank Hall.

The Washington (N. J.) Porcelain Co. has commenced the construction of three new factory buildings to form a new manufacturing unit at its plant along the Morris & Essex Railroad. The structures are estimated to cost $100,000.

Construction work in Newark and neighboring sections continues fairly active, and while not comparable to the activity of normal times, is at least of sufficient volume to keep the structural trades at work, this, of course, being exclusive of government projects. There has been a slight increase in the number of contracts placed for industrial works, principally in plants for war service, among which are a new works for the Niles-Bement-Pond Co., Plainfield, N. J., to cost about $300,000; an addition to the plant of the International Motor Co., Plainfield, estimated to cost about $200,000, and a number of smaller projects in Newark and its suburbs. There has been a negligible quantity in private building operations, owing to the recent rulings regarding non-essential structural projects during the remainder of the war.

New York

Thomas H. Murphy, president and general manager of the Utica (N. Y.) Novelty & Mill Specialty Co., has secured a building permit to erect a brick plant at 1410 Lincoln Ave., at an estimated cost of $10,000.

Plans are underway to resume operations by the Jamestown (N. Y.) Shale Paving Brick Co., whose plant has been closed all winter. The shutdown was attributed to a labor shortage, according to John Mahoney, treasurer of the company.

The market for Hudson River common brick has been improving slightly in the past two weeks. Practically no new demand for general building purposes has developed during these weeks, but there is a feeling of confidence owing to the fact that some important government contracts have recently been placed which will utilize common brick in good quantity. Only a small percentage of the brick plants are operating in the Hudson Valley, and these on a very limited scale, and the production in this section for this year will be lighter than for many years past.

Ohio

The Queen City Shale Brick Co. of Cincinnati, Ohio, has been incorporated with a capital of $25,000 to deal in brick. The incorporators are: William Egner, George W. Diekmeier, L. A. Biedinger, Edward A. Knoor and M. F. Galvin.

The Claycraft Brick Co., of Columbus, Ohio, closed a contract to furnish 300,000 fire brick for government use. The fire brick are to be made at the Shawnee plant of the company. Just where the brick will be used has not been disclosed.

The brick manufacturing plants in Ohio, because of the recent fuel curtailment orders, are working on less than half time or capacity. This is especially true of plants where shipping facilities are not the best. Reports show that the output of face brick plants in Ohio is approximately 33⅓ per cent. of capacity.

Just what the housing conditions are in Cleveland, Ohio, and what his organization proposes to do to relieve them, was to be told to the Cleveland Real Estate Board by Louis A. Moses, former president of the board and lately appointed general manager and secretary of the Cleveland Real Estate and Building Co. Mr. Moses announces that a survey of the conditions, which will give actual figures to the authorities in Washington, who have the power to award appropriations for financing house construction, is nearing completion. Because of inability to finance house building it is Mr. Moses' belief that perhaps only 40 per cent. of the normal needs will be met there this year. The argument that 30,000 young men have left the city to enter government service does not alter the extreme need, Mr. Moses points out, for their places have been taken by older men, who have come here with

WHY not an "On-the-Job" GANDY instead of a belt that slips and slacks and bursts out lacings at critical times?

Genuine GANDY stitched cotton duck belting is the outcome of long study of traction power, shafting, machinery and all elements that enter into its use.

Genuine GANDY belting never cracks, rots, stretches. It stands the abuse of sun, rain, heat, steam, oil and grime and acid fumes, and is equally efficient for inside or outside work.

Many GANDY belts now in use have been on the job without intermission for periods of from 20 to 30 years.

Don't trust your production to slipshod belting.

Replace your "slackers" with "honest-to-goodness" workers.

Use our Engineering Department to secure the size and ply GANDY best suited to your particular work — and to be sure of the genuine GANDY BELT, look for the GREEN EDGE and Gandy trademark.

Faithfully,
"On-the-Job" GANDY
Service Manager

The Gandy Belting Company
732 West Pratt Street Baltimore, Md.
New York Branch: 36 Warren St.

GANDY BELT
Stitched Cotton Duck

KISSEL TRUCKS

The War Has Developed New Truck Construction Standards To Meet Your Requirements

STRENGTH must be in abundance—unlimited power absolutely necessary—economy desirable, but dependable performance first. These service essentials reach their highest development in Kissel Trucks.

Kissel, realizing the unusual service now demanded of trucks, has built into Kissel Trucks proven mechanical features and structural innovations that have been proven out in over a hundred different lines of business.

The sturdy Kissel-built engine, perfected worm-drive rear axles, heavy duty front axles, heat-treated frame, springs, brakes, etc. are designed, in harmonious proportions and perfectly balanced, to reduce wear and prolong the life of the truck.

Some of the largest concerns in the Brick and Clay Manufacturing field are Kissel Truck owners. See your nearest Kissel dealer for reasons why.

Kissel Motor Car Company
Hartford Wisconsin, U. S. A.

their families, thus actually increasing the need. This has complicated the situation, and caused extreme congestion where working men live.

Oklahoma

That the brick plants and greenhouses of Oklahoma may not have to curtail the consumption of fuel as the states east of the Mississippi will have to do, is the assuring news that is given out from the office of P. A. Norris, federal fuel administrator for Oklahoma. Mr. Norris is in Washington to take the matter up with Fuel Administrator Garfield. Fuel administrators for the states in this district met in Kansas City recently and decided that a curtailment of the fuel in these states would hinder instead of help the fuel situation. One of the great problems facing the operators in Oklahoma and surrounding sites is the movement of the cheaper grades of coal suitable only for steam plant purposes. To cut off the plants which use this grade of coal would mean the slowing up of the entire coal supply, and would probably result in suffering on the part of the domestic consumers.

Pennsylvania

The Liberty Sand & Clay Co. has been incorporated at Pittsburgh, Pa. with a capital of $10,000, by E. W. McCarrell, D. Lee McConaughey and E. B. Power.

The Colonial Clay Co., Tyrone, Pa., has filed articles of incorporation with a nominal capital of $5,000 to engage in the development of clay properties. T. J. Gates is the principal incorporator.

The Diamond State Clay Products Co. has been incorporated at Philadelphia, Pa., to mine for clay and manufacture clay products, with a capital of $100,000. Wm. C. Brister of Ambler, Pa., and John H. Schall and C. L. Bundy, of Philadelphia, are the incorporators.

Shareholders of the Wagner Fire Brick Co., Scranton, Pa., reorganized recently and decided to issue bonds to the amount of $100,000 to be used as additional capital. It was stated that the company has sufficient orders on its books to insure continuous operation. The new directors are E. D. Comstock, Pittsburg; Frank J. Beierschmitt, Mt. Carmel; Joseph S. Kroft, W. W. MacCullogh and Earl V. Wagner, all of Scranton.

The Chestnut Ridge White Brick Co. has gone out of existence so far as manufacturing at Kunkletown, Pa. is concerned. The enterprise has been sold, and the new owners, the Kunkletown Brick & Kaolin Co. Inc., will begin immediately to make the necessary repairs and put the plant in shape for the manufacture of refractory brick. The company expects to have a force of 100 men making brick early in June.

Texas

The Corsicana (Tex.) Brick Co. has recently filed notice of an increase in its capital from $50,000 to $80,000, to provide for business extensions.

Wyoming

A new and much needed industry has been established in the plant of the Lander (Wyo.) Brick Co., which began operations on May 20. The company is composed of Ray Gentle, Waite Rice and J. J. Cottrell, the latter being general manager. Buildings have been erected and new machinery installed. The plant will have a daily capacity o

10,000 brick and will employ 12 men at the start, in the manufacture of common and pressed brick of superior grade.

* * *

Meeting Called for Building Federation

Steady pressure has been exerted thruout the past months y those vitally interested in the building industry toward he formation of a federation or co-ordination of the building industry. Strange to say, this gigantic branch of the ation's business up to a few months ago has been unable o boast of a national organization to safe-guard its interest r to be of assistance to the government in solving numerous structural problems involved in the military preparaions.

After some preliminary work on the part of the organizaions already existing and connected with the building inlustry, a call has been sent out by the American Institute f Architects, signed by its president, Thomas R. Kimball, nder date of May 14, which reads as follows:

"The American Institute of Architects believe the time as come when steps should be taken toward federating the vhole building industry of the United States, in order that he Government may have the most intelligent support and owerful co-operation of all the interests involved.

"The war-time need of such action appears to be immeditely imperative and it would seem that the first and paranount duty of the building industry is to place its knowldge, skill and equipment unreservedly at the service of the ation, involving as it does elements and factors of the widst diversification. That service can only reach its maxinum of efficiency thru intelligent adjustment of all the vital arts. The building industry also owes it to itself seriously o study from the broadest possible viewpoint the inevitable isorganizing influences of war which have already been elt, and thru such study to determine what steps can be aken toward bettering conditions and minimizing any furher unnecessary disorganization.

"With a view to the possible formation of a national oranization, which might assume the burden of this tremenous undertaking, the American Institute of Architects, acepts the patriotic duty of initiating the movement. To this ask the whole building industry should subscribe. As a first tep the Institute invites you to send a duly authorized and ccredited representative to a conference to be held at the ngineering Societies Building, 25 West 39th Street, New ork City, beginning at 10 a. m. on June 14, 1918, for the urpose of discussing the situation and determining the ethod and providing the means whereby such an organizaon may be created. This invitation is being issued to ational and important local organizations which represent e building industry, whether technical, manufacturing, conacting or labor."

* * *

Silo Building Active

Silo building in Kentucky and Southern Indiana has een active this season. While a large percentage of silos re being built of concrete, and a smaller number of mber, still a few here and there are of tile. Crop conitions are excellent and farmers have plenty of money is year. Crop reports at the present time indicate that e Kentucky and Southern Indiana farmers who have not lready lifted their farm mortgages will be able to do so the fall, and the silo outlook is promising.

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

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400 Chestnut Street
Philadelphia, Pa.

The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
Brick Drying (English edition)	1.00
Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record
610 Federal Street, Chicago, Ill.

MACHINERY *and* EQUIPMENT

Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

Correction

In the advertisement of the Thwing Instrument Co., of Philadelphia, Pa., in the May 21 issue of *Brick and Clay Record,* an error was made in the headline.

This headline reads—Why Base Metal Are More Desirable than Platinum Thermo-couples for measuring temperatures below 800°C. (3000°F).

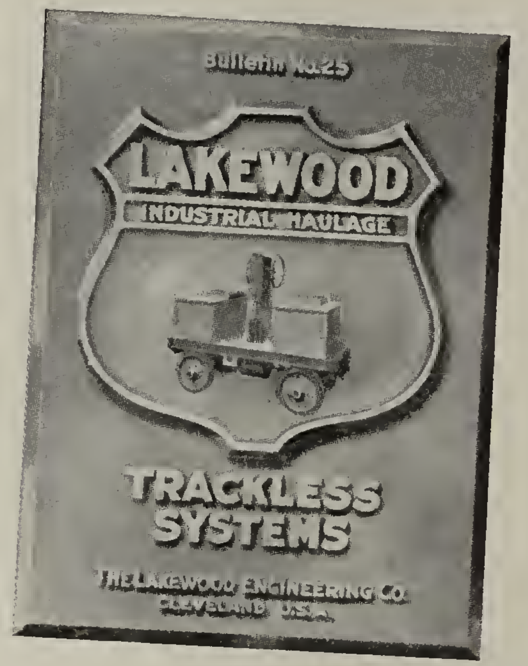
The mistake occurred in the temperature figures, and the last part of the sentence should have read—for measuring temperatures below 1300°C. (2400°F).

⁂

Lakewood Industrial Haulage

It is doubtful if a single clay product plant exists tha has not felt the pinch of labor shortage. In consequenc of this shortage, any device that is actually labor savin is welcomed by the industry.

One method of conquering the shortage is by the use o industrial haulage systems, and in this the Lakewood Engineering Co. of Cleveland, Ohio, are coming to the fro with a very complete line of storage battery tractors a trucks.



Bulletin No. 25 Shows Many Uses for Industrial Trucks and Tractors

In a recent catalog all of the manifold uses of the trucks are shown by photograph, and many ideas usable clay plants may be obtained.

The excerpt that follows is from the first page of th catalog and is self explanatory:

To complete the electric haulage system, the Lakewo Engineering Co. recently purchased the assets, pate and good will of the Galion Dynamic Motor Truck C of Galion, O. Their rubber tired storage battery tract and trucks—drive all four, steer all four—are epoch-ma ing factors in the practical usage and serviceability Trackless Hauling Systems.

The Lakewood Engineering Co. are pioneer car ma facturers. Gradually the company has expanded—u today it manufactures practically complete lines of b industrial and construction equipment.

This expansion, together with an ever increasing demand, naturally increased the productive area. Today Lakewood plants number six—Lakewood, Milwaukee, Chicago Heights, Galion, Elyria and West Park. Thus it is apparent that the Lakewood Engineering Co. and its corps of engineers are prepared most efficiently to serve all industrial divisions relative to "complete electric haulage systems," or their individual units—their adaptability, their reliability, their efficiency and their economy.

* * *

Kiln Insulation

In a compact one page bulletin, the Celite Products Co. have reproduced a portion of Carl B. Harrop's article, The Heat Balance of a Continuous Tunnel Kiln. The complete article was delivered before the American Ceramic Society and reproduced in volume 19 of the Transactions.

That portion of his address, including photographs and drawings, which dealt with kiln insulation is now available in Celite Bulletin No. B-5. It may be obtained by addressing the offices of the Celite Products Co., New York, Chicago, Los Angeles, Pittsburgh or San Francisco.

* * *

New Brown Pyrometer Catalog

A new eighty page catalog has just been issued by the Brown Instrument Co. of Philadelphia, Pa. It depicts the entire line of Brown indicating and recording pyrometers and high temperature measuring instruments.

Some very new and exceedingly interesting instrument types are explained, some of them for the first time: viz., high resistance pyrometers that have an internal resistance of 600 to 1,000 ohms; a new precision heat meter, in which all errors due to line resistance are eliminated; Brown automatic temperature control and Brown automatic signaling pyrometers; the base and rare metal couple; resistance radiation and optical pyrometers—in short the catalog is practically a pyrometer encyclopaedia.

In the clay industry, there is such a live, active interest in pyrometry on all types of kilns, that there should be an active demand for this booklet. It is sent free to any interested parties, cheerfully.

* * *

"Trailerize" Motor Trucks

If the 435,000 motor trucks in the United States were operated at 80 per cent. of the efficiency possible with semi-trailers, the total tonnage hauled by these units every 12 months would be equal to 1,423,635 train loads of 55 freight cars each, or eight times as much as these trucks are now estimated to be hauling annually," declared H. C. Fruehauf, general manager of the Fruehauf Trailer Co.

"According to recent estimates the 435,000 motor trucks in this country have an average load capacity of 2½ tons each. However, careful investigation developed the fact that the average motor truck operates at about 35 per cent. efficiency. That is to say that a big majority of the motor trucks are not loaded to their full capacity while being operated.

"Assuming that each truck makes an average of four trips per day for 300 working days a year, the motor trucks now in service if operated with semi-trailers at 80 per cent. efficiency, and carrying a load in one direction, would show a gain per year of 6,144 tons per truck or 2,672,640,000 tons per annum on all the trucks in the United States.

"If these trucks, equipped with trailers, could carry loads in both directions this annual gain would be equal to 106,905,600 freight car loads of 50 tons each. The magnitude of this extra tonnage is almost inconceivable, but it is 53 times the total tonnage handled thru the Great Lakes during 1917.

"Increased operating efficiency in motor trucks is imperative. The freight car and locomotive shortage is so great that we should make the widest and best use of our transportation facilities.

"It is true that many clay manufacturers, and business men in other fields of industry have become aware of the

What Would You Save If Your Ware Did Not Crack Or Check In Drying?

You men who are making porcelains, china, refractory shapes, or any other high grade ware—answer that! What would you save?

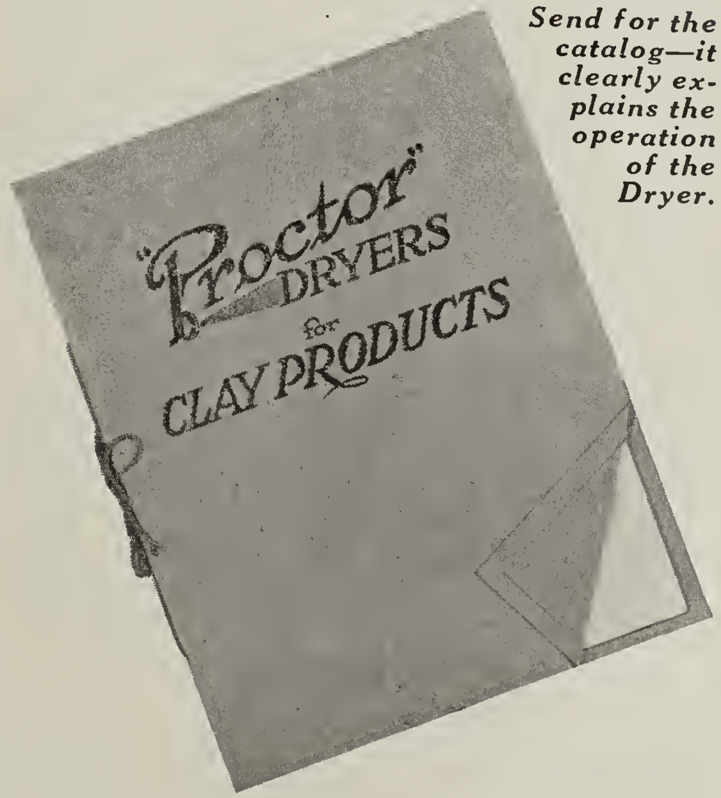
Go out on the cooling stubs now; count the checks, the cracks, the number of pieces damaged during the drying process, and estimate what this continual loss means to you in one year of operation.

It can be eliminated by using the Proctor Dryer, and the ware, formerly damaged, goes into the packing cases as A grade ware, and is sold, instead of going to the scrap pile.

This feature, safety in drying, is one of the great features of the Proctor Dryer.

The Philadelphia Textile Machinery Co.
Sixth Street and Tabor Road
Philadelphia Pennsylvania

Send for the catalog—it clearly explains the operation of the Dryer.



Coal Supply?

You will have difficulty in securing the coal necessary to the operation of your plant next spring.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 7c a week ($4.00 a year), THE BLACK DIAMOND is the cheapest. safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

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CHICAGO, ILL.
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economies resulting from the use of semi-trailers. They know that a horse can pull a much heavier load than it can carry, but they are slow to apply the same reasoning to a motor truck.

"Our experience, based on practical demonstrations, has been that a semi-trailer and truck will haul three times as much as the truck alone—and over the same roads and under the same conditions."

* * *

International's New Producer Gas Patents

In the late past it has been the desire and effort of the International Clay Machinery Co. to cover the entire continuous kiln field with improved patents and up to this date about five new improvements upon present continuous kilns have been allowed by the patent office.

One very important patent is granted on a compartment kiln having bag walls on each side of the compartment. This necessitates an improved communicating flue system whereby the burners in the bag wall are individually supplied with air. It is also provided with an improved form of gas duct, whereby the gas is lead to the burners from beneath the kiln.

Another patent recently allowed on a compartment kiln, provides a method of taking the air from cooling compartments, dividing it, and delivering it to as many advanced compartments as are burning. The present common practice is to burn out one compartment at a time; and in case two are burned, the last one fired uses whatever air the first one did not utilize in combustion. This is particularly unsatisfactory from very obvious reasons.

Professors Parmelee and Hursh Testing International Producers

Still another patent has been granted on a tunnel type of kiln, where the fire is supplied from a bag wall on each side of the kiln tunnel; this gives all of the advantages found in compartment firing.

These patent grants enable the International Clay Machinery Co. to take a stronger position in the producer gas and kiln field than ever before, even tho they are pioneers in this class of burning.

To still further strengthen their position, they obtained the services of Geo. C. F. Vater, one of the foremost combination engineers in the country and a man who has long specialized on the application of producer gas to ceramic kilns.

* * *

A good definition of appraisal might be stated as "a complete listing of property, correctly classified and arranged with sufficient description to identify item, the valuations based on replacement costs and with depreciations showing the actual cash value, made by disinterested experts in this line of work."

The average clay plant owner who has never come in contact with a modern appraisal does not realize its completeness, accuracy and usefulness. He thinks of it in terms o his own inventory, which is not in any way correct.

The modern appraisal is a safeguard and a real necessity A great many of the clay plants are considering it in thi light and are securing the service. The Rau Appraisal Company of Milwaukee, Wis., are experienced experts in cla plant appraisal.

BRICK and CLAY RECORD

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The publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself: 1. To consider, first, the interests of the subscriber. 2. To subscribe to and work for truth and honesty in all departments. 3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive. 4. To refuse to publish "puffs," free reading notices or paid "write-ups;" to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?" 5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity. 6. To solicit subscriptions and advertising solely upon the merits of the publication. 7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification. 8. To co-operate with all organizations and individuals engaged in creative advertising work. 9. To avoid unfair competition. 10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

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The EDITOR'S CORNER

We Take No German Money

WE ARE IN RECEIPT of the following letter from a reader under date of June 12:

It is with deep regret that I notice you have been carrying advertisements of a concern whom you know, as well as the general public, is owned and operated from Berlin, Germany. You, of course, know your own business, but I feel, and I think the majority of the brick fraternity to whom you cater feel that such pro-Germanism should be stopped.

Our friend refers to the advertising of the Orenstein-Arthur Koppel Co., Koppel, Pa., manufacturers of clay plant equipment.

We replied to this writer as follows:

"Your letter of June 12 has no doubt been prompted by strictly a patriotic motive on your part, but at the same time it is quite evident that you are not thoroly conversant with the facts pertaining to the operation of German-owned companies operating in the United States.

"You perhaps know that A. Mitchell Palmer is the custodian of enemy-owned property in this country.

"We understand he has taken over hundreds of companies whose stock was either wholly or in part owned in enemy countries.

"This process has followed the procedure of canceling the stock owned by enemy aliens, and the issuing of new stock to certain American citizens who have become stockholders as representatives of the United States Government.

"The United States Government, therefore, owns the new stock, and each of these companies is, therefore, operated, not from Berlin as you say in your letter, but thru the co-operation of the United States Government, and such American citizens as might have already owned stock, or solely by the United States Government if the stock had previously been totally owned by citizens of enemy countries.

"The United States Government has let it be known that it is desirous of having these companies operate to their fullest extent. In fact we were talking to a gentleman today who is manager of a company whose stock was partly owned by German citizens. He told us that they have just today received an order from the United States Government for 25,000 pounds of their waterproofing material to be used on a Government contract.

"The profits that might accrue to the Government-owned stock of this company is put into Liberty Bonds, and this money is now and will continue to be property of the United States Government.

"Furthermore, after the war the Government does not propose to permit the stock of any of these formerly enemy owned companies to revert to any one who is not a citizen of the United States, but will sell each share of stock to an American citizen who will have a right to bid for it, and the proceeds will, of course, be paid to the enemy alien who formerly owned the stock.

"We have written you thus at length in this matter, because your letter would indicate to us that you have not previously been aware of these facts, and we feel that your letter calls for no further comment, as we are sure you had no desire in writing it to question the Americanism of *Brick and Clay Record* and its owners—nor would intimate that we are not just as strongly for the cause of Democracy as any other American citizen."

* * *

A Combined Specification That Should Not Be Allowed

A MATTER which will undoubtedly come up before Committee C-4 of the American Society for Testing Materials at its twenty-first annual meeting, Atlantic City, N. J., June 25 to 28, will be that of a combined specification for clay and cement pipe.

Men who are not hopelessly prejudiced in favor of cement, say that this proposed specification would be ill-advised and impracticable. It is just as foolish to try and write a combined specification for clay and cement sewer pipe as it would be to write a single specification for the building of all kinds of roads. Can you imagine one specification covering brick, cement, wood block, asphalt, or granite block roads? These materials are entirely different and need a separate specification covering each. The same is true of clay and cement sewer pipe. They are different materials and have different properties. One will stand a higher test and last longer than the other. It is believed that if such a combined specification were adopted by the Society it would permit cement pipe being used where it ought not to be used.

Examination of the sentiment of the committee as regards the situation reveals the fact that it is not at all in agreement. In other words there is a division. The chairman of the committee, if it comes to a vote, will vote against this specification, according to his present attitude, and two other prominent and able engineer members will do likewise. Secretary of the society, Edward Marburg, feels strongly against the adoption of a specification where the committee is not in agreement and therefore is opposed to the proposed combined specification.

The convention of the society, as has already been mentioned, takes place June 25 to 28. It is hoped that the committee will appreciate the situation and will refuse to recommend the proposed specification and that it will not be necessary for the society to take the trouble to vote it down.

* * *

Loaning Men

THE CLAY PRODUCTS INDUSTRY, as a whole, seems to be having a hard time getting adjusted to war conditions and fitting in with "Uncle Sam's" tremendous war-making business machine.

The European conflict is surely bringing about some tremendous changes in personnel and in methods of doing business these days. Custom and precedent have been turned upside down so that what has gone before seems to be very little of a guide for future action. Wages have gone sky high and the laboring man has assumed a more important and powerful position in the order of things, industrially speaking; new materials are being discovered, and new ways for using well known materials are being found. Engineers are accomplishings new feats with unheard of methods and processes, but what seems to be most noteworthy is that executives are finding that industrial readjustment is forcing them into new fields.

Shortly after the war broke out, many industries, seeing what was ahead, gladly loaned their men to the government in its emergency. For instance, the lumber industry furnished men for inspection work in connection with the construction of army cantonments while the packing interests have loaned chemists and other scientific men to the food administration. Many other instances might be cited where men are now doing work for the government which is very similar to tasks in their own field with which they are familiar.

The clay products industry, unfortunately, has lost out in the benefits that would come after the war from having its men get a larger and bigger experience after having helped with Government work. For instance, the officer in the Quartermaster's Department who has charge of purchasing clay products for government construction is not a clay products manufacturer altho he was connected with a large building supply firm in the East, prior to the United States entering into the war. He is a capable man but is not a clay products manufacturer.

The industry, on account of its misfortune, is losing some of its best executives and engineers. Hardly a week passes but what we learn of another well known man going into new fields of endeavor.

We trust that when the government's construction program is under way and clay products are used more extensively than heretofore, we will be able to loan "Uncle Sam" a few of our men and thus be able to keep them in the industry.

* * *

Government Should Curtail Manufacture of "Wrinkled Tin"

IN A MEETING of refrigerator manufacturers with the War Industries Board at Washington during the early part of June, it was pointed out by the Board that it is as yet impossible to say whether there will be a ten per cent. or seventy-five per cent. shortage of materials available to meet the requirements of non-war industries after the necessary war needs of this country and the Allies are provided for, but that it is already certain that there will be marked shortages of some things, of which iron and steel are the most universally used. An attempt will be made by the United States Bureau of Standards to find a process of enameling on zinc for use in making refrigerators, in place of galvanized iron sheets now used; no shortage of zinc is likely, it is announced.

On June 14, it was announced by the press that General Pershing has requisitioned practically all of the surplus steel of the country for manufacture of shells and railroad rails and as a result the nation faces a steel famine.

In the face of the above, we are confronted by the fact that manufacturers of corrugated iron culvert pipe, in so far as we know, have not been asked to curtail their output a single ounce, altho clay and cement pipe has been curtailed twenty-five per cent. by the United States Fuel Administration.

A press announcement states that all the steel the country possesses must be devoted to war purposes and manufacturers of steel articles not essential to the conduct of war will be unable to obtain the raw material unless Chairman Baruch of the War Industries Board succeeds in developing a new surplus. Therefore, it may be that the War Industries Board is planning some curtailment of the manufacture of "wrinkled tin." If not, it certainly should. It is hardly fair that manufacturers of clay and cement culvert pipe should be restricted to seventy-five per cent. of their normal output, while corrugated iron culvert manufacturers are permitted to run to full capacity and, furthermore, to absorb the twenty-five per cent. curtailment of clay and cement culvent pipe manufacturers.

In Next Issue

Will appear an article by Joseph K. Moore on graphical charts; "General Manager Gets Some Light on Paving Contracts," by G. W. Greenwood; an account of the summer meeting of the American Ceramic Society, at Zanesville, Ohio; an article on sewer pipe by B. T. Sweeley, as well as many other worth-while features.

WAR-TIME HELP *for th*

The War Industries Board Has Set About Adjusting American Industry to W
Than Has Heretofore Been Shown and As An Instrumentality for This Work
Section—The Aim and Purpose of This Section Is to Enable Every Industry T

By Wal

IT WOULD, PERHAPS, be stretching the truth a trifle to say that Uncle Sam is endeavoring to soften the blow that the United States Fuel Administration has aimed at the brick and clay products industry. However, that is an interpretation that may very readily be placed upon several recent actions at Washington by men in the trade who are prone to look on the bright side of things. Forsooth, it is a means to win the war, but the fact stands out that during the past fortnight there have been important new manifestations of a disposition on the part of the Government to extend war-time help to the clay products industry. Incidentally, it may be balm to some interests in the trade that have been rubbing sore spots that the swash-buckling Fuel Administration is no longer the dominant influence that it was in Washington. The War Industries Board is overshadowing it.

As a matter of fact, it is this War Industries Board,—given new potency in the general scheme by President Wilson's order dignifying it as a full-fledged Federal executive agency—that is responsible for one of the most important of the new plans that will operate to the advantage of the brick and clay products industry that has been thrown out of step by the war rush. The War Industries Board has set about adjusting American industry to war-time conditions and war-time demands with a little more discrimination and discretion than has heretofore been shown and as instrumentality for this work has created a new cog in the machine, known as the Resources and Conversion Section, with Charles A. Otis, a practical business man of Cleveland, as chief. The new institution will, furthermore, be under the general direction of George N. Peek, now known as Commissioner of Finished Products of the War Industries Board but with whom many brick and clay products men came in contact while he was acting under the less definite title of Industrial Commissioner.

WHOLE INDUSTRY TO DO WAR WORK

By and large the aim and purpose of the new Section is to enable every industry that has been thrown out of gear to "find itself" and get busy on war-time work. The beauty about this, from the standpoint of the clay products man, is that the new program promises to take a somewhat saner view of the situation with respect to interests that have more or less inelastic limitations. No brick or clay products interest has exactly relished the idea of being condemned to death, industrially, simply because it could not convert to munitions manufacture or to shipbuilding and yet that is what some of the policies of readjustment that have been sprung would amount to. Now we have this new and apparently better-digested plan which aims above all else to find for each idle manufactory some form of war work that will not be too utterly foreign to its regular line and that will enable the concern involved to maintain its organization intact and make use of the plant equipment it has on hand.

This latter is a most important consideration and it is strange that it did not have more weight in the earlier deliberations. Any business man knows that this is no time to attempt to secure and install new machinery or equipment of any kind unless it is imperatively necessary and mere patriotic considerations relative to the conservation of steel and other essential metals counsel the fullest possible utilization of the installations in place. In only slightly lesser degree is the same thing true of personnel in office, yard, and factory. Men will do best something for which they have had training and experience or which is, at least, akin to their regular vocation.

ASSIGNMENTS TO BE GIVEN MANUFACTURERS

In the quest then for war-time duties for industrial establishments not now fully occupied, the first effort of the new Resources and Conversion Section will be to assign the production of some war essential in a related line before risking diversion to unfamiliar task even if that be practicable. Better yet, from the standpoint of the brick and clay products industry, it is announced that an effort will be made to find justifiable and war-time uses for as many as possible of the products that have heretofore been discriminated against simply because they did not appear at first glance to be war esentials. This more tolerant attitude in official circles is, by the same sign, likely to result in a little more careful consideration of the needs and requirements of the civilian population that must stand behind the army if we are to win the war. Already it is apparent that in lines such as steel, where the Government had commandeered virtually the entire output of the country, the military demand is not going to be so heavy as anticipated and that there will, after all, be a certain proportion of the "drafted" materials to be turned back into normal commercial channels.

One of the best things about this new plan for getting industry on a war basis without some of the jolts and jars that characterized the earlier attempts, is that it is not to be a long-range undertaking with business men all over the country under the necessity of selling inaccessible officials at Washington on their respective propositions. The Resources and Conversion Section at the War Industries Building overlooking the Potomac will be only a clearing house. The real work of readjustment and realignment will be carried on in twenty geographical districts into which the country is divided. In each of these local zones there will be on the job a regional organization of business men who will, of course, be familiar with conditions in their vicinity and with the characteristics of the plants to be taken care of. At each regional headquarters there will be an executive who will serve as

LAY PRODUCTS INDUSTRY

*e Conditions and Demands, With a Little More Discrimination and Discretion
ated a New Cog in the Machine, Known As the Resources and Conversion
s Been Thrown Out of Gear to "Find Itself" and Get Busy on War-Time Work*

cett

the representative of the War Industries Board and will maintain constant contact with the Resources and Conversion Section but even these representatives will be, insofar as possible, local men, familiar in each instance with the district embraced in his detail. All this, mind you, is to be purely an information service and a constructive service for the exchange of technical and other information that will enable all plants to have the benefit of any ideas and innovations that may be developed in any of them incident to war-time transformations and the attainment of war-time efficiency. The Resources and Conversion Section is not going to do any purchasing for the Government. The nearest it will come to that will be to advise the purchasing and supply divisions at Washington where they can get needed commodities.

BUREAU OF STANDARDS

Governmental activity that should unquestionably result beneficially to the clay products industry is found in recent undertakings at the National Bureau of Standards—Uncle Sam's great research and testing laboratory. This particular line of new work was forecasted a few months ago when the Director of the Bureau of Standards asked Congress for an extra or increased appropriation of $20,000 to be used to study methods of measurement and technical processes used in the manufacture of pottery, brick, tile, terra cotta and other clay products, and for the study of the properties of the materials used in the clay industry.

War conditions have, if anything, emphasized the importance of the work that the Standards Bureau is attempting to do in ascertaining and prescribing the domestic clays that will best suit various conditions. Hardly a week goes by but that the Bureau of Standards is asked to specify a clay for a specific process. So impressed is Director Stratton with the importance of the work that his institution is doing in the sphere of refractory problems, etc., that he desires to change the name of the Ceramic Division in the institution to Clay Products Division in order to more accurately indicate to the trade and to the public the scope and character of this division which Director Stratton enthusiastically declared, the other day, "is worth every dollar that the whole bureau has cost since its beginning."

Speaking of the number of inquiries that are received these days with respect to clay products from the military officials and other war managers Director Stratton said: "Before the war the manufacturer of refractories or the man building a furnace which required lining asked the question. It is the same now, but in addition, the military use of materials has become of great importance." With all the special war demands upon the resources of the Bureau there is being continued the Bureau's study of the fire-resisting properties of building materials, a study that is likely to develop important selling points as well as valuable technical information for the clay products industries. Speaking of this work, not long ago, the Director of the Standards Bureau remarked: "One of the most serious questions in this country today is that of building codes. We are tending more and more toward fireproof construction. Among the letters which I recently received was one from the War Department asking whether some material which they proposed to line buildings with was fireproof. The people in the various cities also call upon us to establish building codes; they have not the information at hand with which to construct them. I do not know of any one engineering problem in this country that needs fundamental data more than this does. We have three large programs under way, one subject being the determination of the value of fireproofing around steel columns."

BUREAU TO MOVE TO WASHINGTON

Clay products men who keep in touch with the various lines of work that the Bureau of Standards is doing in the various fields will be interested and possibly surprised to learn that all the work is to be concentrated at Washington. That is to say, there is to be an abandonment of Pittsburgh as a scene of operations in favor of the national capital. Heretofore all structural material and kindred activities, including the clay products work, has been carried on at Pittsburgh in buildings loaned by the War Department. The Federal experts have, thruout the last eight or ten years, found the Pittsburgh site an undesirable place for research work such as they have been carrying on with respect to clay products and, latterly, with storage of war supplies in the vicinity conditions became intolerable. Accordingly, it was determined to bring this work to Washington and the President has provided out of his emergency fund the sum of $1,000,000 for new buildings and equipment, including kilns, furnaces, etc. The optical glass work which has attained to great importance owing to war necessities is included in this project.

The Federal Trade Commission which, as our readers know, has lately been conducting economic investigations covering cost of production in certain important branches of the brick and clay products industry is likely to, ere long, establish points of contact with yet other branches of the trade. Under a resolution lately introduced by Senator Thompson of Kansas, the Trade Commission is instructed to investigate and report to the United States Senate the cause of the present prices of the various commodities purchased by the farmers of the country. Presumably this investigation will embrace brick and tile for silos, drain tile, etc.

TWO CONFERENCES *of* GREAT IMPORTANCE

Common Brick Manufacturers to Meet at Chicago on June 26, and Face, Common and Paving Brick Manufacturers, Represented by Delegates, to Meet at Atlantic City, New Jersey, June 28 at Call of War Industries Board.

DEVELOPMENTS in the matter of organizing brick manufacturers, particularly with regard to war service work, which have been moving somewhat slowly, are now taking on new life and at this writing it is possible to announce two meetings of national scope and at least one of local importance.

COMMON BRICK MEETING ON JUNE 26

Under date of June 8, Wm. Schlake, president of the Illinois Brick Co., Chicago, into whose hands has been committed the preliminary work of getting together the brickmakers, sent out a call for a meeting to be held at the Hotel LaSalle, Chicago, on Wednesday, June 26, at eleven a. m. "The purpose of this meeting," the letter says, "is to form an organization similar to those of other lines of trade, in order to better promote the use of common brick as a building material." Mr. Schlake states that it is deemed especially essential that this organization be formed at this time so as to make it possible to keep a man at Washington to see that the United States Government gives to common brick its share of the vast appropriations that have recently been made for building purposes.

THE ATLANTIC CITY CONFERENCE

Since this call was sent out, Richard L. Humphrey, chief of the Building Material Section of the War Industries Board, has set June 28 as the date upon which there will be a meeting of common, face and paving brick manufacturers at Atlantic City, N. J.

In view of the great number of manufacturers of face, paving and common brick in the United States, it is believed that a meeting with every manufacturer represented would be impracticable. It is therefore deemed advisable that groups of manufacturers meet and select representatives to attend the meeting, not to exceed one from each state in each group.

Mr. Humphrey has divided the country up into groups as follows:

1. New England States.
2. Eastern New York and Northern New Jersey to but not including Trenton.
3. Philadelphia, Southern New Jersey, including Trenton, Delaware, Eastern Pennsylvania, including Harrisburg.
4. Maryland, Virginia, District of Columbia, North Carolina east of Asheville.
5. Tennessee, South Carolina, North Carolina, west of and including Asheville, Florida, Georgia and Alabama.
6. Western New York and Western Pennsylvania.
7. Ohio, West Virginia and Eastern Kentucky.
8. Illinois, Indiana, Western Kentucky and Southern Wisconsin, including Madison.
9. Southern Peninsula Michigan.
10. Mississippi, Louisiana, Texas and Arkansas.
11. Washington, Oregon, California, Nevada, Arizona and New Mexico.
12. Colorado, Utah, Idaho and Montana.
13. Missouri, Kansas, Iowa and Nebraska.
14. North and South Dakota, Minnesota, North Peninsula Michigan and Wisconsin north of Madison.
15. Chicago district.

The invitation of Mr. Humphrey will be extended to each producer of brick, and while it is believed only the number of delegates suggested should attend, there will be nothing to prevent those who feel that their interests will not be properly represented by such delegates from attending this meeting.

TO APPOINT BRICK WAR SERVICE COMMITTEE

It is the intention of the Atlantic City gathering to formally appoint a war service committee. The purpose of this war service committee is to form a direct contact with the War Industries Board and the industry, and be a medium by which the needs of the government can be ascertained and communicated to the industry and thru which the needs of the industry may be conveyed to the War Industries Board.

It is not expected that associations shall meet and select their delegates, but that all of the producers in each group should meet independently of the association and select their representatives.

In line with the above program, there will be a meeting of group No. 8 at the La Salle Hotel, Chicago, on June 20 at eleven o'clock.

It has been decided to allow the June 26 meeting in Chicago to stand and for those who have been invited to attend and confer with regard to the common brick situation as it relates to government needs. It is believed that many of those who attend the June 26 meeting will go immediately to Atlantic City to be present at the June 28 conference there.

* * *

Federal Trade Commission Investigating Fire Brick Costs

The Federal Trade Commission has been manifesting considerable interest in the cost of manufacture of fire brick and refractories due to their close relationship with the steel industry and the war. It is a matter of common knowledge that the price of steel has long since been fixed by the Government, and since fire brick and refractories are so important a commodity in the manufacture of steel it is not hard to imagine that the steel makers are responsible for the Federal Trade Commission's interest in fire brick costs.

The commission set Monday, June 10, as the date upon which it would give a hearing to all manufacturers of high grade fire clay brick, silica brick, chrome and magnesite brick, and the hearing was held at the Federal Trade Commission's headquarters at 2:30 in the afternoon of the day mentioned. It was conducted by Ex-Governor of New Jersey John F. Fort, vice-chairman of the commission, and Victor Murdock, and one member of the War Industries Board was present.

On behalf of the commission, Mr. Murdock announced that costs had been secured on the refractories products above named, for the months of October, November and December, 1917, and for the year 1917, at the instance of the War Industries Board, and that while the War Industries Board may have asked for these costs in order that it might be guided in its decision as to whether any fixing of price was necessary, that it need not be and should not be taken as an indication that any such final action would be taken.

The cost figures as found by the accountants of the Federal Trade Commission were announced, and on the whole, were regarded as being very carefully and fairly figured.

The report of the Federal Trade Commission is now in preparation and will be submitted to the War Industries Board in the very near future—indeed it may already have been submitted.

* * *

Federation Meeting Postponed

Mention of a meeting which was to have been held in New York City on June 14 in the interest of the formation of a federation or co-ordination of the building industry, was made in the June 4 issue of *Brick and Clay Record* on page 1083.

Since, we have been advised that this meeting has been postponed. In this connection the following communication has been received from Thomas R. Kimball, president of the American Institute of Architects:

"It has developed that the ultimate objects for which the conference of the building industries called for June 14, 1918, was proposed are already substantially accomplished or assured by the action of the government's own agents.

"Wherefore it has been deemed ill-advised to hold such a meeting. We therefore hereby advise that the proposed conference to be held in the Engineering Building, New York, June 14, 1918, has been definitely abandoned.

"Please accept our appreciation of your effort to help in this movement as evidenced by your generous acceptance of our invitation."

* * *

Government Offers Financial Aid

Brick, clay products and allied interests in Cleveland, Ohio, are ready to act in stimulating the house building program there, following the receipt of the order from Washington that banks shall finance house building programs.

Whatever the conditions affecting materials, it is the belief of business men of Cleveland that the house building program should be pushed at once. As many as 5,000 moderate priced houses are required immediately and 10,000 families, brought here by the increased demands for government work upon factories, must be taken care of. This number is increasing weekly. According to Paul L. Feiss, of the Cleveland Real Estate Housing Co. which has been working to obtain a part of the $60,000,000 appropriation for housing in centers of war material production, the standard of housing, wherever the funds come from to finance the program with, will be settled within the month, and that these houses will be built to rent at the lowest possible price.

Cheerful view of the situation here is taken by E. A. Roberts, secretary of the Building Exchange. In his opinion the move by the government will permit the purchaser of a lot to go ahead and build his house.

Less optimistic view of the immediate situation is taken by John Harms, general manager of the American Face Brick Co. He points out that manufacturers of brick cannot produce much more, and that stocks on hand, being decidedly limited, have naturally caused an increase on the average of $4.00 per M. Revival of building activities, however, will cause a great demand for face brick, says Mr. Harms, but there will be no great rush as compared with former years at this time, and the present 60 per cent. of last year's business is likely to be maintained thruout the duration of the war. "One encouraging fact," says Mr. Harms, "is that Cleveland is in need of school buildings, and at least six or seven will be built immediately. In addition, several big Catholic buildings have been financed, and these building operations will go on, in spite of price advances. The fact that Cleveland is short 5,000 to 6,000 homes brings the feeling that building cannot come to a complete standstill here, which places Cleveland in a better position than some other cities.

* * *

Ohio Roads Cause Truck Driver Arrests

Following arrests of many truck drivers during the last few weeks in Northern Ohio, charged with carrying too heavy loads upon their trucks, agitation for roads, built to withstand heavy traffic, has been started by the Cleveland Automobile Club. The plan has been laid before the Cleveland Engineering Society by Fred H. Caley, secretary of the automobile body. It is his claim that roads up to the present, with few exceptions, are fine for joyriding, but not up to the needs of commercial purposes.

Truck owners and drivers, protesting against the arrests, claim that the charge of trucks carrying weight beyond their capacity is a wrong notion and that the real fault is in the roads and their construction. They claim that the roads must be paved heavier, since at the present time it is more important than ever to have the roads sufficiently stout to hold heavy war-time traffic. Truck owners point out also that the railroads are unable to handle all the traffic and shipping, and since trucks must be used universally, it is vitally necessary to change the roads to meet the new conditions.

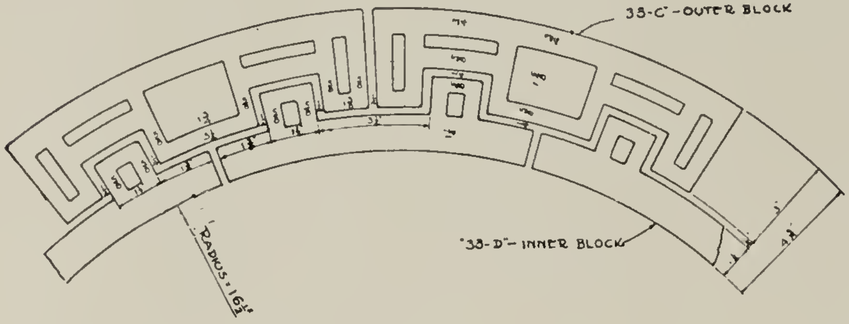
These and additional facts are substantiated by Secretary Caley in his proposals to the engineers. An additional suggestion made by him, which is believed to hold the answer to the cost problem, in part, at least, is that truck owners should pay a higher license fee than passenger car owners.

How important new and better roads must be is demonstrated in another way in the announcement of the organization of a comprehensive system of handling freight between large cities at distances from each other. The Paragon Motor Freight Co., lately incorporated, is completing stations in Cleveland, Akron, Youngstown and Pittsburgh. The station in Cleveland is on Oregan avenue. Headquarters are at Akron. Entirely new features for this method of freight transportation have been adopted by this new company. At every station there will be inbound and outbound freight platforms, regularly organized freight handlers, solicitors, a claim department and regular bill of lading system. Reliable drivers, of long standing experience and honesty, have been employed, and all have an interest in the company. Another feature is that the company offers 24 to 48 hours service between points of 100 miles, according to W. H. Hyatt, president of the company, who was in Cleveland this week. Other officers of the company are: Vice-president and general manager, F. C. Newman; treasurer, C. H. Clay.

* * *

New Segmental Sewer Block

The Laclede-Christy Clay Products Co., St. Louis, Mo., recently patented a new two-piece segmental sewer block. It has some interlocking features which are worthy of note. The ease and economy of construction, as well as its great strength, are also pointed out. The blocks can be made for any diameter of sewers or culverts with the thicknesses of the webs and shells made in proportion to the weight they are required to sustain. A drawing, showing in some detail the design of the new block, is shown herewith.



Two Piece Segmental Sewer Block With Interlocking Features, Recently Patented by the Laclede-Christy Clay Products Co., of St. Louis, Mo.

* * *

Ohio Hard Hit by Freight Rate Increase

The announcement of an increase of two cents per hundred weight on all brick rates thruout the country came as a bombshell upon the brick industry of the Buckeye State. It was some time before the manufacturers and jobbers realized the extent of the advance on brick shipped into the Columbus market, as well as in the markets at Cincinnati, Cleveland, Dayton, Chillicothe, Xenia, Hamilton and other large markets. The advance instead of being 25 per cent. will average from 33⅓ to 50 per cent. in many instances. This is conclusively shown by the figures.

The old rate on brick from the Hocking Valley manufacturing field into Columbus was 68 cents per ton. This meant about $2.04 per thousand, as most brick average three tons to the thousand. The advance announced several weeks ago increased that rate to 80 cents on the ton, or $2.40 per thousand. Now the blanket advance of two cents per hundred weight means an advance of $1.20, or increasing the rate to $3.60.

The rate from the Hocking Valley field into Cincinnati, Cleveland, Xenia, Hamilton, Dayton and Middletown was originally $1.20 per ton, or $3.60 per thousand. The advance of several weeks ago increased the rate to $1.40 per ton, or $4.20 per thousand. Now the latest advance announced by Director General of Railroads McAdoo increases the rate $1.20, or makes the rate $5.40 per thousand. The rate to Huntington, W. Va., which was formerly 95 cents per ton, had been increased to $1.30 per ton, or $3.90 per thousand. The latest increase, which becomes effective June 25, increases the rate by $1.20 to $5.10.

In figuring the rate of Chillicothe, it is found that a large increase is provided in the sweeping advance. The rate now is $1.10 per ton, or $3.50 per thousand. The recent advance of $1.20 makes the total rate $4.50. But when we have figured these rates, we must then add 3 per cent. war tax, which amounts to a further increase of from 8 to 11 cents on the thousand, and in some instances even more. The rates on hollow tile, on the 5x4x12 size, which are styled the backing up tile, show a big increase. From Morrow into Columbus the old rate was 50 cents on the ton, or about $2.50 per thousand, as a thousand of that kind of block made five tons. The new rate of 2 cents per hundred weight amounts to $2, making a total rate of $4.50, plus the war tax. This is an increase of almost 100 per cent. On standard hollow brick the rate has been increased from approximately 87½ cents to $1.57½ cents, as it is figured that there are one and three-quarters tons in a thousand of that style of brick.

Short haul rates show the most pronounced increases. Thus the rate from Groveport, the site of one of the plants of the Claycraft Brick Co., to Columbus is taken as an example. The old rate was formerly 35 cents, which was increased to 40 cents several weeks ago. This makes a rate of $1.20 per thousand. Now the recent advance is $1.20, making an advance of exactly 100 per cent. The same increase is noted in the rates from Taylor Station to Columbus.

* * *

George Orr Leaves Purington

W. G. D. Orr, of the Purington Paving Brick Co., Galesburg, Ill., has resigned his position as general manager and is now with the A. B. Dick Co., of Chicago, who manufacture mimeographs and duplicating machines.

Mr. Orr will remain a member of the Board of Directors of the Purington Co., and will always use every effort possible to further the interests of that company particularly, and the industry generally. He states that it took him quite a while to make up his mind to leave the business, as he has always been very much interested in it and liked the people with whom it has brought him in contact.

Mr. Orr was with the Purington Paving Brick Co. eleven years and six months. The first two years he was a salesman and then for two years acted as assistant general manager. Upon the retirement of W. S. Purington, a little over seven years ago, he was appointed general manager and has acted in that capacity ever since.

* * *

Beg Your Pardon!

In the May 21 issue of *Brick and Clay Record,* on page 978, it was reported that the California Brick Co., which operates a paving brick plant near Decota, Cal., has about exhausted its allowance of fuel and will close its works.

N. A. Dickey, president of the company, calls our attention to this item, stating that the information we received is not true. We wish to take this occasion to correct the item above mentioned and say that it was printed in error.

* * *

The Washington Brick, Lime & Sewer Pipe Co.'s employes at Spokane, Wash., have organized a war savings society and pledged themselves to take out $1,500 worth of thrift stamps during 1918.

MODERN FABRICATION of SILICA BRICK

Because of the Great Need for This Product, Factories Have Had to Speed Up Production to the Utmost—This Has Led to More Rapid and Improved Methods of Manufacture—The Plant Described Herein is One Which is Noted for Its Efficient Operation

OF ALL THE ARTICLES which have been published on the subject of silica brick, nearly every one of tnem has dealt with the materials that go to make up silica brick rather than the actual manufacturing process in use. The purpose of this article is not to tell the physical and chemical requirements of silica brick nor the proper kind and quantity of constituents to use, but to give the readers of *Brick and Clay Record* an idea of the equipment and plant methods in use on one of the largest and most modern silica brick plants in the world. The following article is written from some notes taken not long ago on the plant of the Standard Refractories Co., of Claysburg, Pa. This plant covers most of a plot of about twenty-five acres of land and cost an enormous sum to construct and maintain. It is supplemented by about one hundred and twenty-five company houses, and a similar number of houses are yet to be built.

Showing Special Silica Shapes Drying on the Cement Floor Above the Combination Steam and Waste Heat Dryer.

SILICA IN FORM OF QUARTZITE

The silica is obtained in the form of quartzite rock which is blasted from one of the ridges of the Allegheny mountains, at the base of which is situated the plant of the Standard Refractories Co. Cars containing quartzite are lowered by means of an incline to a place in the rear of the plant where they are dumped into chutes which feed two No. 5 'X Champion jaw crushers, each of which is operated by electric motors. The rock which is crushed to about the size of eggs, is elevated by means of a bucket elevator to a large steel bin, located on the third floor of the main factory building. In front of this steel bin on the third floor of the molding room are lime mixers. These are steel troughs open at the top. A heavy shaft runs horizontally thru all of these mixers and is driven at a slow speed by a small electric motor.

The proper amount of dry lime is weighed out on scales and placed into the empty mixer. Hot water is then added and this is mixed by the blades on the revolving shaft. Only one mixer full of slacked lime is used for a pan full of quartzite. The above mixture, when properly slacked, is allowed to run out into a trough underneath which leads to a pipe feeding the wet pans on the floor below. Two men take care of these mixing machines.

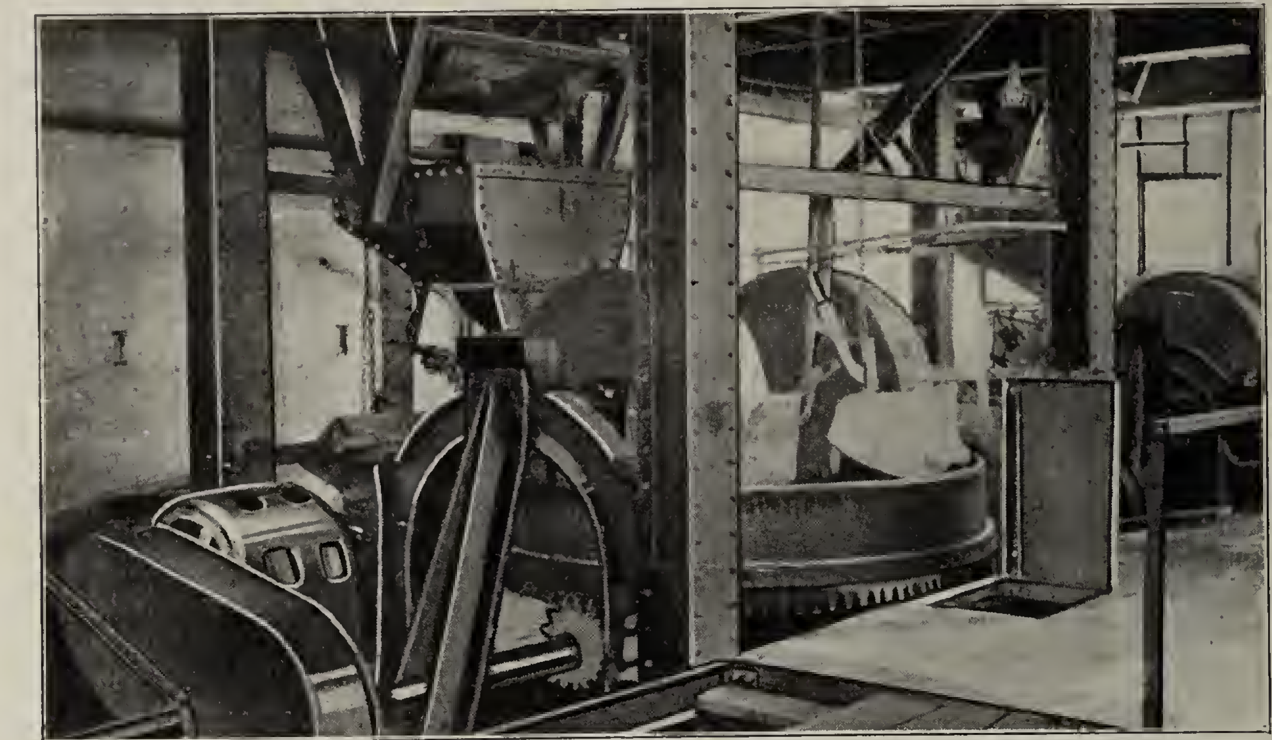
On the second floor are located the wet pans. These pans are equipped with large mullers each one weighing four tons. Each pan is under-driven by a 60 horse power Burke motor. Link-belt chain drives are used for the transmission of power from the motor to the wet pan. In connection with this form of transmission, it may be well to point out that at first some trouble was had with the detachable rim on the gear wheel. Now the flange is cast directly on the drive wheel instead of having a detachable rim, and no trouble is experienced. We might also add that at first the chain drive was not liked very well but later when the men became acquainted with its operation they liked it very well and it has proved much more satisfactory than any other form of transmission formerly employed.

AUTOMATIC WEIGHER IN USE

A weighing device patented by Chas. A. Searing, of Pittsburgh, is located above and to the rear of each wet pan. When the weigher is empty the chute leading from the storage bin above is open and the weigher becomes full with crushed quartzite rock until it contains the proper

The Thirty-eight Foot Kilns Are Well Constructed and Give First Class Results in Burning.

weight of material, when thru a mechanical arrangement the inlet is automatically closed and a supply of quartzite rock is shut off. The pan tender can dump the rock into the pan whenever he wants to by simply pulling a lever. A weigher full of rock then empties into the bin and returns to position where it automatically refills itself again. By turning a valve a lime mixer full of slacked lime is poured into the pan and then the two materials are ground, after which it is dumped by means of a pan emptier, the material falling thru a hole in the floor into a large steel tank below, from where it is taken to be hand-molded into ware.



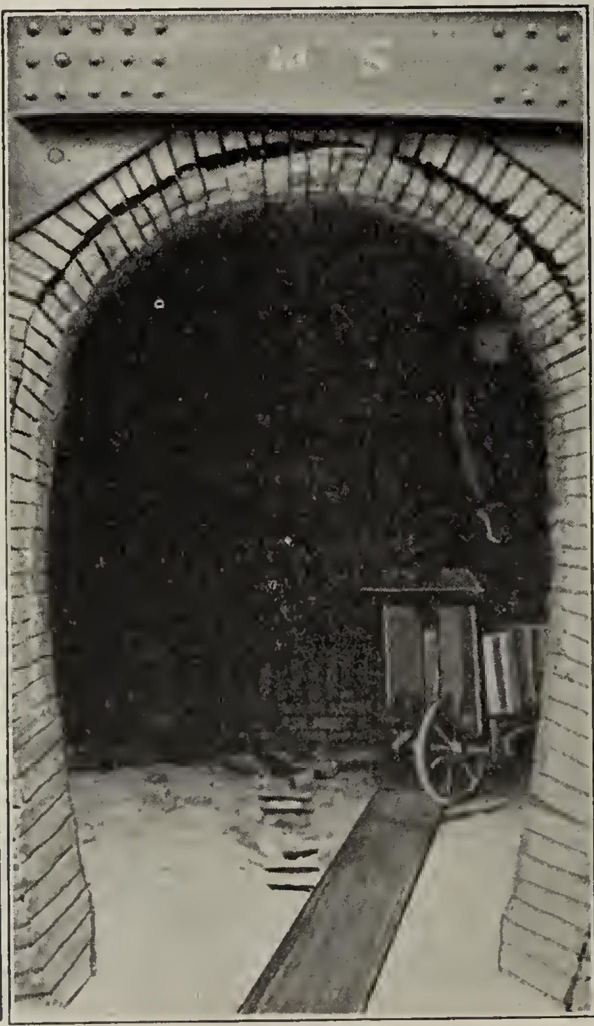
This View Tells a Whole Story in Itself. Some of the Special Features to Be Noted Are the Individual Electric Motor Drive With Link-Belt Transmission, the Automatic Weighing Device and the Hole in the Floor Thru Which the Batch Falls Into the Steel Tanks on the Floor Below.

Cast iron pan bottoms cannot be used because they last less than two weeks. High grade steel bottoms are used, which last considerably longer. Except for fifteen to thirty minutes between each of the three shifts, which time is used for oiling, the pans are kept running constantly thruout the entire twenty-four hours of the day thruout the whole year.

HIGH EFFICIENCY AT MOLDING TABLES

On the ground floor of the same building is located a molding department consisting of steel tanks of peculiar shape, one under each wet pan. There are four molding tables at each tank. The molder and his helper work at each table and turn out an average of five cars a day, each car holding 624 brick. The molder takes the raw material out of the tank and works it and then fills each of the six compartments of the iron molds that are used. He then scrapes off the excess, after ramming it hard and the helper uses a six board template and pushes the brick out of the mold on to a metal pallet which is placed on a rack dryer car. The arrangement at the molding tables has been worked out so that a very high efficiency can be maintained. Sand trays containing molding sand are located in a position

One of the Vertical Water-Tube Boilers is Shown in the Center of the Above View. It is Set in a Brick Encasement.



Notice the Peculiar Shaped Wicket Built on This Kiln. It Reduces Considerably the Radiation Area of the Door.

Showing One of the Vertical Boilers With an Auxiliary Furnace Which May Be Used in Case of Shortage of Waste Heat.

convenient for use by the molders and their helpers.

The brick are dried in a combination steam and waste heat dryer. The complicated shapes are placed upon wooden pallets lined with steel to prevent warpage, which are set on a cement floor above the dryer, to dry. They require from three to fifteen days to dry.

There are eighteen large 38-foot round downdraft kilns on this plant. The kiln walls are nearly thirty inches thick but they are very heavily lined with fire brick. In fact, the fire brick lining is at least fifteen inches in thickness. Eight radial flues run into the main flue. Unlike the main flue on most kilns, these are curved so as to give a better arrangement for the waste heat system and stack draft. There are only eight fire boxes on these kilns and flat grates are used. The crowns are built 12 inches thick and have a 2½ inch platting on top.

The ware is set to a height within eighteen or twenty inches of the crown and is burned very slowly for the first three or four days. After that the heat is brought up rapidly and the burn completed in ten to fifteen days, at which time a very high temperature is reached. Cones and pyrometers are used for measuring the heat treatment. During the first few days of cooling the brick are allowed to cool very slowly.

METHODS OF UTILIZING HEAT FROM KILNS

The greatest feature on this plant is the method in which heat from the kiln is utilized for heating the boilers and producing the steam and power required for operating the plant. There are four 300-horse power Wickes vertical water-tube boilers set out in the kiln yard between the two rows of kilns. These boilers have very high iron stacks. After a kiln has been on fire for five days, the hot gases instead of passing out of its own stack which is dampered off, pass thru the boiler tubes and out thru the boiler stack. In this way the heat from the kilns is utilized, thus bringing up the efficiency to a higher degree than has ever been before accomplished. Part of these boilers have auxiliary furnaces which are fired in case of a shortage of heat from the kilns. The steam is transformed into electric power. Power is generated to run all of the motors driving the crushers, wet pans, mixers, belt conveyors, etc., and to furnish light to the entire town of Claysburg.

* * *

RARE EXAMPLE *in* FACTORY CONSTRUCTION

THE VALUE of face brick as a material for artistic structural work is often emphasized in buildings of the higher class. Exterior treatment is made far more classic where the use of decorative effects are sought and the important part that this character of material plays in the finished building is thus made possible. When used in connection with other clay products, such as decorative tile, and lumber and even stucco, there is a combination that is rare in its charm and that lends to the whole a most pleasing view.

There are examples of this kind to be found in many instances and the accompanying view is one of the artistic kind. The building completed some months ago is in true Swiss style and portrays an old Gothic hall of the medieval guild of watchmakers in the land of the Alps. It is located in Cincinnati, on one of the city's beautiful hills, and is known as Time Hill, being the home of the Gruen Watch Case Co., where are manufactured the famous Gruen Verithin watches.

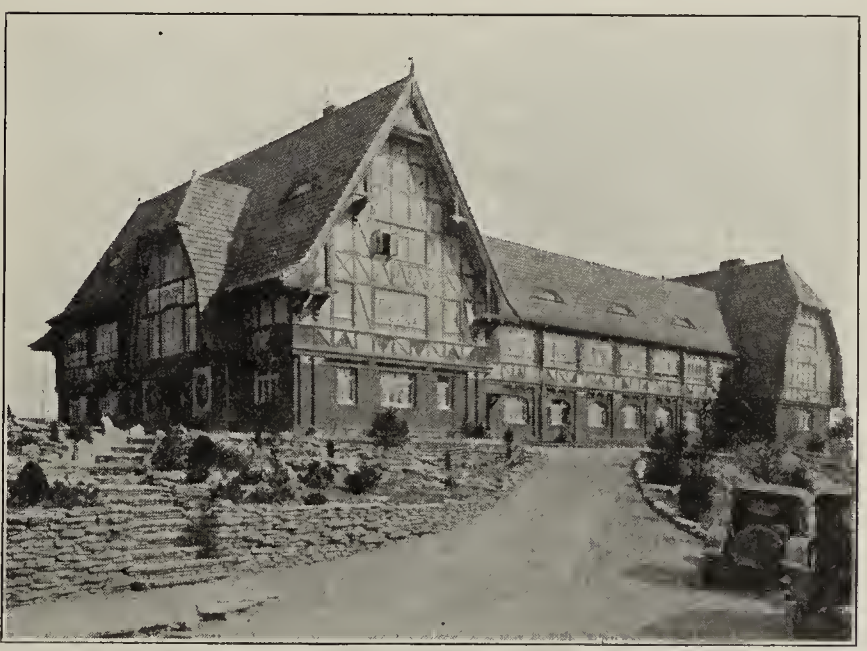
WATCH FACTORY LOOKS LIKE CLUB HOUSE.

Aside from the ideal setting of the structure, with its atmosphere breathing the charm of nature, where a fountain plays, and rugged rocks, ferns, plants and flowers abound, it is one of the beauty spots of the Queen City. One would scarcely expect this imposing building to be an industrial plant, it rather reminds the beholder of a club, where art and nature combine to bring about that greatest of all delights to the workers.

The first floor is faced with Shore-tex Oriental brick. The colors are soft and pleasing to the eye, being a combination of reds and browns, with the gabled roof of light green tile. Eighty thousand brick were used in this structure, and these were furnished by the D. C. Shorey Brick Co., of Cincinnati. The roofing tile was made by the Ludowici-Celadon Co., whose products have been used on many other attractive buildings.

Decorative Rookwood tile has been intermingled in that portion of the building just above the first floor and the panels are of wood and stucco. The effect on the whole is one that has a rare beauty in its exterior treatment.

The main entrance, flanked by antique lamps, is in keeping with the idea sought by the architect, G. C. Burroughs, and inside there is seen a hall in paneled wood of dark color and soft gray Rookwood tile, with a massive fireplace of the same, on either side of which are located seats that of old the Gruen watchmakers guild might have sat on and planned, smoked and talked shop. This room has a wood beamed ceiling and a stairway leads to the work rooms above. On either side are the offices of the executives and business department, and directly back of these the general offices are located.



This Building, Which Has the Appearance of a Swiss Chalet, Is The Home of the Gruen Watch Case Co.

In every section of the building there has been sought the same ideal setting. The idea here has been to get away from the sordid and to infuse into the minds of the workers that higher ideal that makes labor so much more a delight. That this end has been attained, no one who views this notable structure can doubt. The part that burned clay has played to bring this into being will always remain an example of that more artistic type that has not always been proven a fact, because there was lacking some of the essentials that are vital in completing the whole, and these have not been lost sight of in this very striking instance.

INDUSTRIAL HOUSING OFFERS OPPORTUNITY *for* CLAY MATERIAL

More Industrial Housing Projects Are Now Under Consideration or Construction Than in Any Previous Period—It is Gratifying to Know That Clay Products Are Playing a Very Important Part in This Program—However, the Field Needs Still Greater Development

INDUSTRIAL HOUSING in the United States dates back to the beginning of the factory system. The colonial manufacturer who established his mill where water power was available usually found an undeveloped country, and by force of necessity had to provide accommodations for the labor which he brought to his establishment. Much the same conditions are found at the present time in many parts of the United States where new industries have sprung up, making what were formerly small towns into large important manufacturing cities.

TO HOLD LABOR, HOUSE IT

Much attention has been focused upon the employment situation during recent years because of the difficulty of employers in large industrial centers to get and keep a sufficient supply of labor. Results from many investigations have shown that one of the main reasons for this shifting labor in large industrial plants was the inadequate housing accommodations available for the worker.

In the past wages were low and the cost of labor turnover was hardly considered, for there was always a long line of new men waiting for a job, and, because of this excess of supply of men over demand, a workman was not so ready to throw up his job and seek another. He would put up with housing conditions for the sake of having any job at all. However, in these times when the demand for labor exceeds the supply, the workman is no longer contented with the low class of housing conditions that he has had to put up with. He now seeks a job where not only the work is pleasant but the opportunity to obtain a good class of home is at hand. This has led to employers viewing the situation with a great deal more concern, resulting in great improvements in housing conditions and the establishment of an employes' welfare department in many of the large industrial organizations.

Modern industrial homes are now planned for fire safe-

"Uncle Sam" Has Made a Tentative Allotment of Nearly $50,000,000 to be Expended in Housing Operations for War Workers. Millions of Dollars will be Spent by Private Enterprises and Large Corporations for Housing Projects in Localities Where War Industries Are Flourishing. This Offers a Lucrative Field for Clay Products and Manufacturers Should Make Strong Efforts to Show the Advantages of Building with Their Material for Permanency, Beauty, Sanitation, and Low Cost.

The Three Views Shown on This Page Are Representative Homes of Housing Projects in Which Hollow Tile Furnished by the National Fire Proofing Co., Which Is Developing Business in This Field, Was Profusely Used. The Two Lower Views Show Part of Twenty Houses Erected by the Keystone Steel and Wire Co., at Peoria, Ill., While the Upper View Shows Ten of Eighty Houses Constructed of Hollow Tile at Midland, Pa., for the Crucible Steel Co., of Pittsburgh, Pa.

ness, sanitation, general safety, comfort, and for every other end conducive to the health and welfare of the workers. The increased efficiency of working men resulting from better living conditions is a point heretofore much overlooked.

CLAY PRODUCTS IN THE HOUSING PROGRAM

Clay products is just beginning to find a place in this field and it is with the purpose of emphasizing the big opportunity for burned clay material in this class of building that this article is written.

Thirty Double Houses and Boarding Houses for White Mechanics Erected at the New Shipbuilding Plant of the Bethlehem Steel Co., at Sparrows Point, Md.

With the construction of many new and large government depots for the manufacture of munitions and other war material, there will be a need for a large number of new homes to be built for the workmen. Many of these factories will be kept in operation even after the war and will manufacture products in demand during peace times as chemicals, dye stuffs, etc. Hence, the need for the construction of homes that are not temporary makeshifts but permanent fixtures in the community.

Not only these new plants but some of the older concerns, some of only medium size, that is, employing from two to three thousand workers, are building homes for their employes. This is being done by these small concerns mainly to help keep their labor on the plant. With some plants, the class of homes that they are able to offer new workmen, is almost as great an inducement to get the worker as is the wages and class of employment that he will obtain in the plant. Such companies as the Kohler Co., of Kohler, Wis., and the Norton Co., Worcester, Mass., are doing this work and completing high class homes which they rent or sell to the employes.

In the recommendations for permanent housing projects by the Board of Industrial Housing and Transportation of the Department of Labor, clay products leads the list of materials for the exterior. Also, President Wilson said a short time ago: "Preventable fires are more than a private misfortune. They are a public dereliction. At a time like this of emergency and of manifest necessity for the conservation of national resources, it is more than ever a matter of deep and pressing consequence that every means should be taken to prevent this evil." There is only one way to do away with these preventable fires and that is to build homes of non-inflammable material—clay products.

In one of the monthly reviews of the Board of Labor Statistics is stated: "While nine-tenths of all companies' houses are of frame construction, several employers are experimenting with constructions of concrete and hollow tile in various combinations. A large anthracite coal operator in Pennsylvania built a group of twenty double houses (forty dwellings) of poured concrete without air spaces in the walls, but he had not found them as successful as he had anticipated. They cost more than the same style and size of brick house and while some of the tenants report them as damp, to an observer they appear rather cold and forbidding on the inside. Plaster has peeled off in spots and where pieces have broken off the stair coping, which is also poured concrete, it is more difficult or impossible to make repairs. Hollow tile with stucco exterior is being used successfully in mining towns in Arizona, variety being obtained by tinting the stucco various colors."

LUMBER PRICES NOW PROHIBITIVE

No doubt the main reason for such a great number of frame houses having been built is due to the fact that at the time of their construction lumber was very much cheaper than clay products and labor did not require as good a class of home as it does at the present time. Now, however, the cost of lumber construction is practically equal to that of clay products construction. Consequently, large corporations are giving more consideration to this class of material for building their industrial homes. This fact, together with the fireproofness, low repair cost and the possibility of increased beauty gives clay products a very good

Another View of Workingmen's Houses, All With Modern Improvements, at Sparrows Point, Md., Built of Hollow Tile Furnished by the National Fireproofing Co.

opportunity in this type of construction of industrial home.

During the past year or two, some concerns have already started to realize the value of building homes on a large scale for their employes and it is expected that a great many more will follow suit.

GOOD HOMES INCENTIVE TO HIGHER IDEALS

It is of material advantage to the industrial plant to build as high class homes as possible. The effect of good housing is instantaneous. The psychology of it is that in such environment the wives and children of the workmen feel that they are somebody. They live in as good homes as the local store keeper, the lawyer, or the doctor. They attain self respect, pride and ambition. They dress better, live better, are happier, and take pride in saving money instead of wasting it in frivolities. Their cultural wants are stirred and likewise their ambitions to gratify these wants are aroused.

It is with clay products that the best results in home building can be obtained and the clay products manufacturer should be quick to press this point home when attempting to find a sale of his product for this class of demand. Furthermore, it is a great advantage to a concern to build a good class of houses because it serves to advertise the company and keep it favorably before the public.

The National Fire Proofing Co., which is one of the largest clay products concerns in this country, has furnished a good deal of its material to large corporations who have built home centers for their workmen. All classes of houses have been built from its material, from a low priced house for laborers who cannot afford to pay high rent, to a high class, well designed house for the better type of workman.

HOLLOW TILE HOMES SAFE AND SANITARY

One of the most important industrial centers where hollow tile furnished by the National Fire Proofing Co. has taken a prominent part in home construction, is that of the new shipbuilding plant of the Bethlehem Steel Co., at Sparrows Point, Md. This big corporation erected one hundred living apartments for white mechanics and one hundred apartments for colored labor. All of these living apartments have hot and cold water, electric light, fireproof division walls, slate or asbestos-shingle roofs.

With war plants in full operation in the thriving cities of the East, and the prospect of a great number of war plants to be built in the West very shortly, there will be a big demand for new homes. Burned clay products should find a very good opportunity for their use in the construction of the vast number of homes that will be required.

* * *

New Jersey Clayworkers' Meeting

The summer meeting of the New Jersey Clay Workers' Association will be held at Trenton, N. J., Tuesday, June 25.

An interesting and instructive program will be presented at the morning and afternoon sessions of the association and all are urged to attend.

* * *

BUILDS BIGGER BUSINESS *with* MOTOR TRUCKS

"BUILD WITH BRICK," says Charles D. Heavey, one of Philadelphia's most progressive contractors. Mr. Heavey is endeavoring to assist Philadelphia business men in building better business blocks, and also better homes, says "Federal Traffic News."

For over three years Mr. Heavey gave his haulage contracts to hired trucks. To a certain extent his business grew because he believed in giving the people his best at all times, but he wasn't satisfied; accordingly two years ago this March Mr. Heavey purchased his first truck. His present fleet of three dump trucks have worked wonders in his business.

"I purchased my first truck," says Mr. Heavey, "equipped with Woods dump body and hoist, about March 23, 1918. Prior to purchasing this I hired trucks for the delivery of brick, and find that it is much more satisfactory and economical to operate my own trucks. It has meant to me more satisfied customers, and the trucks have enabled me, thru their efficiency, to materially enlarge my business. The low cost of operation of the type of truck which I purchased, coupled with the prompt and efficient service rendered me by the sales company of Philadelphia, has made me a firm believer in that truck and the fact that I am a satisfied customer is represented by my repeat orders, and I hope to enlarge my fleet from time to time as business conditions may warrant the same.

"These trucks have been operating every day. The 3½-ton truck has averaged six trips, 1,400 brick per load and fifty miles per day."

Motor Trucks Have Proved Their Advantages to Charles D. Heavey, a Philadelphia Contractor, Who Now Owns Three and Hopes to Purchase More In the Very Near Future.

CERAMISTS *to* EXPLORE CENTRAL OHIO

Great Variety of Clay Industries In and Around Zanesville Will Offer Unparalleled Opportunity to Observe Manufacturing Methods at First Hand at Annual Outing

THE SUMMER MEETING of the American Ceramic Society will be held at Zanesville, Ohio, beginning Tuesday morning, June 25, and concluding Friday evening, June 28. For various reasons the committee in charge of this event placed the dates of the meeting somewhat earlier than usual, and it is hoped that the normally pleasant weather of this season may add to the enjoyment of the occasion.

WONDERFUL CLAY DISTRICT

The Zanesville district affords a great diversity of clay industry, including some of the most notable plants in the country. The industries are favored by the extensive local occurrence of raw materials and the latest modern developments are found in the factory installations.

The region is famed for its scenic beauty with which is blended opportunities for most interesting geological and archeological observations. Plans for the enjoyment of these features have not been overlooked, and the meeting should be one of unusual pleasure and profit to the membership.

Tuesday, June 25, the members will meet at the Hotel Rogge, Market and Third streets, at 9:30 A. M.

The first day will be spent in visiting the plants of the Brighton section of the city. Here are located the factories of the Brush-McCoy Pottery Co., manufacturers of pottery specialties, the J. B. Owens Floor and Wall Tile Co., where two tunnel kilns are under construction, the Ohio Pottery Co., manufacturers of chemical porcelain, and the Mosaic Tile Co., where tunnel kilns are in operation for both bisque and glost ware. These plants will be visited in the order named.

In the evening there will be an informal get-together meeting with the Central Ohio Section in the Chamber of Commerce Rooms.

WEDNESDAY, JUNE 26

The party will leave the hotel at 9 A. M. for the Roseville Pottery, where a tunnel kiln is in operation in the manufacture of art pottery and cooking ware. The members will then proceed to the plant of the American Encaustic Tiling Co., largest manufacturers of floor and wall tile in the world. Two tunnel kilns are here included in the factory equipment.

The members will meet at the hotel promptly at 2 P. M. and proceed to the pier of the Muskingum Valley Transportation Co., whose excursion steamer Louise has been chartered for a trip on the beautiful Muskingum, the Hudson of the West. The boat will proceed as far as the Barracks, the home of the famous artist, Howard Chandler Christy. Here the party will leave the boat and climb the hill for an informal call on the artist. Dinner will be served on the boat during the return trip.

After arriving in Zanesville at about 8:30 P. M., the plant of the Kearns Gorsuch Glass Co. will be visited where modern glass blowing machinery is installed for manufacture of bottles of all kinds.

THURSDAY, JUNE 27

The members will leave the hotel at 9:00 A. M. for the plants of the Burton-Townsend Co., one of the largest manufacturers of paving brick in the country. This company is furnishing paving brick for the completion of the paving of the National Highway which is now being used for the transportation of army trucks to the seaboard. On one of the company's adjacent properties, there is also a modern molding sand plant, an industry of vital importance for which this district is noted.

In the afternoon the members will leave the hotel at 1 P. M. and proceed by auto west on the historic National Highway, passing road houses and other structures dating back to stage coach days. The party will leave the highway at Brownsville for a stop at the famous flint ridge formation. This district is famous geologically the world over, being an immense deposit of amorphous flint extending for several miles. It once afforded the American Indian his most extensive flint quarries for the forming of arrows, hatchets, and other implements. It is not difficult to discover specimens of this early craft on the grounds. From here the party will proceed to the vicinity of Newark where some of the most notable examples of the mound builders' operations in existence are to be observed.

Returning, the members will stop at Buckeye Lake Resort, Central Ohio's playground, where dinner will be served and opportunity to enjoy the amusement features afforded.

FRIDAY, JUNE 28

The last day of the meeting will be spent in visiting a variety of industries in adjacent towns. Taking the trolley one square from the hotel at 1 A. M. the first stop will be at the Ransbottom Bros., stoneware plant, Roseville. This plant has a capacity of over ten cars of stoneware per day. In this same vicinity is located the modern factory of the Nelson W. McCoy Sanitary and Stoneware Pottery Co., at which visiting members will be welcomed.

The next stop will be at Crooksville, a center for manufacture of china and high grade table ware. Representative plants of this district are those of the Crooksville China Co., and the A. E. Hull Pottery Co. These will be visited as time permits.

After taking dinner, the party will leave Crooksville at 1:10 P. M. over the Pennsylvania Lines for New Lexington. Here the members will visit the well-known plant of the Ludowici-Celadon Co., the country's most extensive manufacturers of roofing tile. Producer-gas-fired continuous kilns of the Chamber type are in use and factory installation is highly modern thruout.

From here the party will proceed to the factory of the Ohio Brick & Stone Co., where recent developments in the manufacturing of No. 1 fire brick may be observed.

The members will leave New Lexington at 8 P. M. over the Pennsylvania for Zanesville where they will disband.

OTHER POINTS OF INTEREST

There are a number of other places of interest in and about Zanesville, namely the glass industries at Lancaster, the ceramic department and government experiment station at Ohio State University, Columbus, and the army cantonment at Chillicothe.

The committee will be pleased to assist in directing members to any point in which they may be especially interested.

John B. Rose Insolvent

A petition in bankruptcy has been filed against the Rose Brick Co., 103 Park Avenue, New York City, by the following creditors: The president and directors of the Manhattan Co., $20,000; Coal and Iron National Bank, $10,000; and the Fidelity Trust Co., $21,000. It is claimed that the company has admitted in writing its inability to pay its debts.

The John B. Rose Co., producers of sand and gravel, 103 Park Avenue, New York City, has also had a petition in bankruptcy filed against it by the following creditors: New York Trust Co., $60,000; Harriman National Bank, $10,000, and Mount Vernon Trust Co., $8,005. Like the Rose Brick Co., it is claimed, this concern has also admitted in writing its inability to pay its debts.

* * *

The IDEAL FIREPROOF RESIDENCE

THE FUNDAMENTAL POINTS to be considerel in the erection of any building today are its stability, fireproofness, low cost and attractiveness. When these are combined into a whole, there is little to be desired to bring into realization the ideal home.

Home of Wm. E. Dee, Chicago, President of the Wm. E. Dee Clay Manufacturing Co., in Course of Construction.

The illustrations which accompany this article show a residence and garage built of hollow building tile, covered with white stucco. This residence is located in an attractive spot in Chicago and was built at a cost of about $26,000. It was erected on a lot 100x140 feet, on the corner of which a garage, also built with hollow tile, is located. The residence is 50x33 feet, two story and attic, containing twelve rooms and four bath rooms, also sleeping porches, sun parlors and breakfast porches. It is an ideal residence, due largely to its simplicity in construction and absolute assurance of safety.

The size of the hollow tile used in this building vary, some being 5x8x12 inches and others 5x4x12 inches. Only a single course of the larger tile is required for an eight-inch wall; for a wall of twelve inches a layer of each size and for a two-foot wall, simply two layers of the larger tile. The feature in this way is the saving in time and cost in the laying up of the walls. In addition to being hollow, thus permitting a dead air space, making the structure immune to dampness, there is the value of the faces of the tile being corrugated, thus permitting stucco to be applied directly to the exterior and plaster to the interior walls without lath or furring in either instance.

The pure white effect in this residence was obtained with the use of white cement and white sand. It was applied in three coats, making it above the ordinary in permanence and color effect.

The garage, 45x25 feet, two story, was built in the same way, giving a very harmonious effect. The house is heated with hot water, the plant being located in the garage and the heat piped to the residence. The living quarters of the caretaker are on the second floor of the garage.

The interior of the home is of more than ordinary attractiveness. The music room, living room and reception hall are finished in mahogany while the remainder of the home is in red birch and white enamel. The floors are of oak, with the exception of the breakfast room, kitchen and bath rooms, which are of mosaic tile.

Wm. E. Dee Residence and Garage, Which Were Built of Hollow Blocks Manufactured by the Company of Which He Is President.

The roofs of both buildings are laid with green glazed clay tile, giving a most pleasing effect.

HEAT INSULATION APPLIED *to* KILNS

An Effective Means of Saving Fuel is to Insulate the Walls and Crown of a Kiln With Some Good Heat Insulating Material—The Clay Products Industry Has Been Slow in Realizing This Possibility But Some Plants Have Tried It Out and Found It to be a Great Success

By P. A. Boeck, Ch. E.

IN VISITING CERAMIC PLANTS in various sections of the country during the past five years, the writer's attention has been drawn to the noticeable lack of attention given to heat conservation and economy which have been for years applied in other industries, notably iron and steel, central station power plants, and in the petroleum, gas, electro-metallurgical, enameling and japanning industries and even in baker's ovens, for the lower temperatures.

The development of the heat balance sheet in kiln operation has brought to light the very serious losses which occur continually in kiln operation and many papers and articles have appeared in the technical press which indicate the magnitude of the losses which are recognized as largely preventable. Among these are excellent papers by A. V. Bleininger[1], C. B. Harrop[2], A. F. Greaves-Walker[3], P. D. Dressler[4], T. N. McVay[5], and numerous others. all of whom agree that insulation is an economy well worth considering.

It is a curious fact that notwithstanding this work, only a comparatively few of the ceramic plants in the country have taken advantage of this very evident improvement.

These are notably the builders of the so-called patented kilns whose principal claims to efficiency and economy of operation are based largely on their effective insulation; the number of these however, is largely in the minority. To the writer's knowledge there are today but a score of ceramic plants in the country that have consistently practiced kiln insulation which operate on lower fuel consumption and what is of even greater value, with a smaller scrap pile, than where the matter of heat distribution and losses are ignored.

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[1] A. V. Bleininger, Bureau of Mines Report.

[2] C. B. Harrop, Discussion, American Ceramic Society. 1917.

[3] A. F. Greaves-Walker, "Construction and Design of Down-Draft Kilns, Brick and Clay Record, Sept. 7 and 21, 1915.

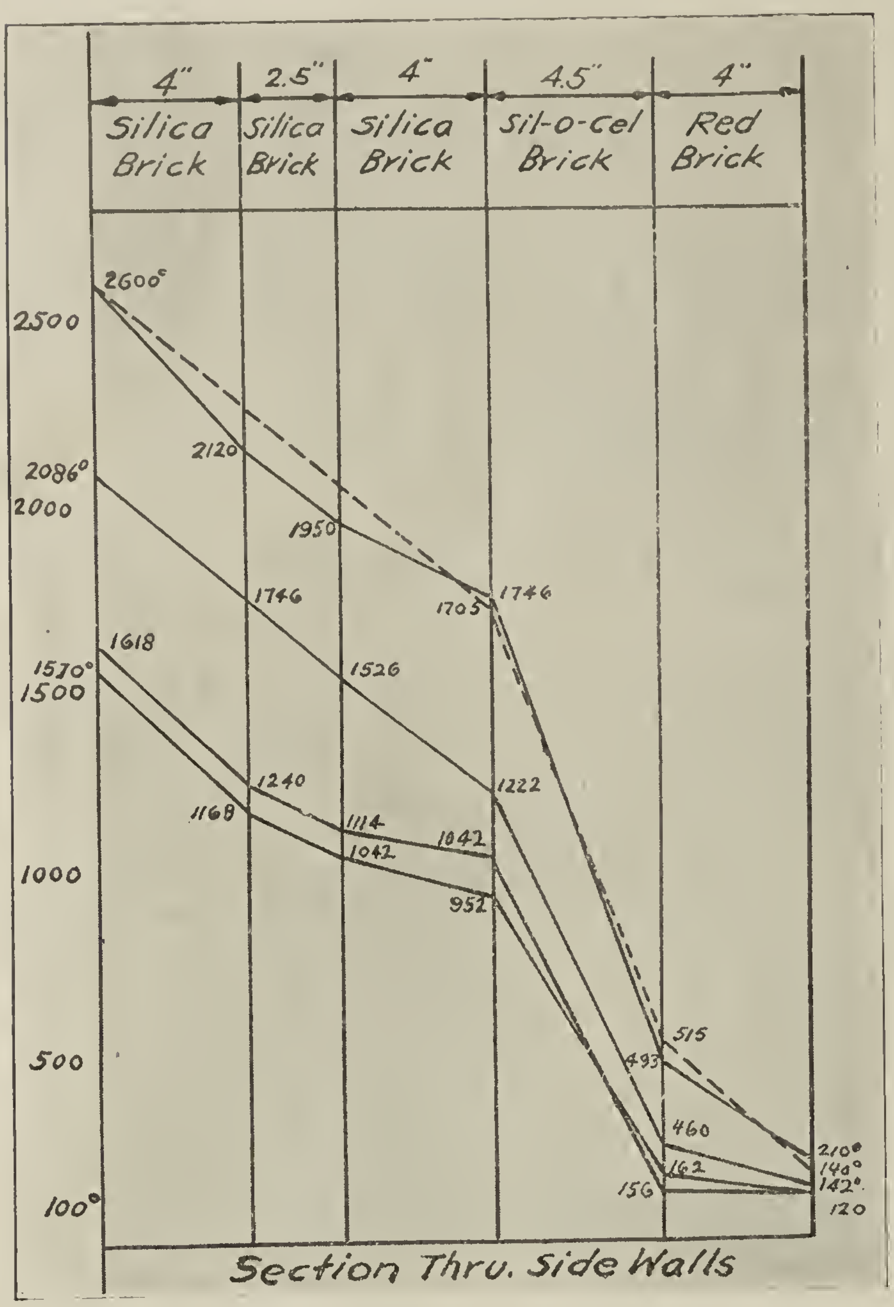
[4] P. D. Dressler, Transactions American Ceramic Society, Vol. XVII, Page 52 (1915).

[5] T. N. McVay, "Construction and Operation of a Thirty-Six Foot Round Face Brick Kiln," Brick and Clay Record, April 10, 1917.

Two Hundred and Fifty Pounds of Coal to the Thousand Brick Is the Saving Accomplished by This Kiln, Which Is Insulated with Sil-O-Cel Brick, Over That of the Uninsulated Kilns on the Same Plant.

OTHER ADVANTAGES OF INSULATION

In addition to the economies which have been shown to exist in kilns properly insulated there are other advantages which are of infinitely greater importance to the ceramic man. They are:



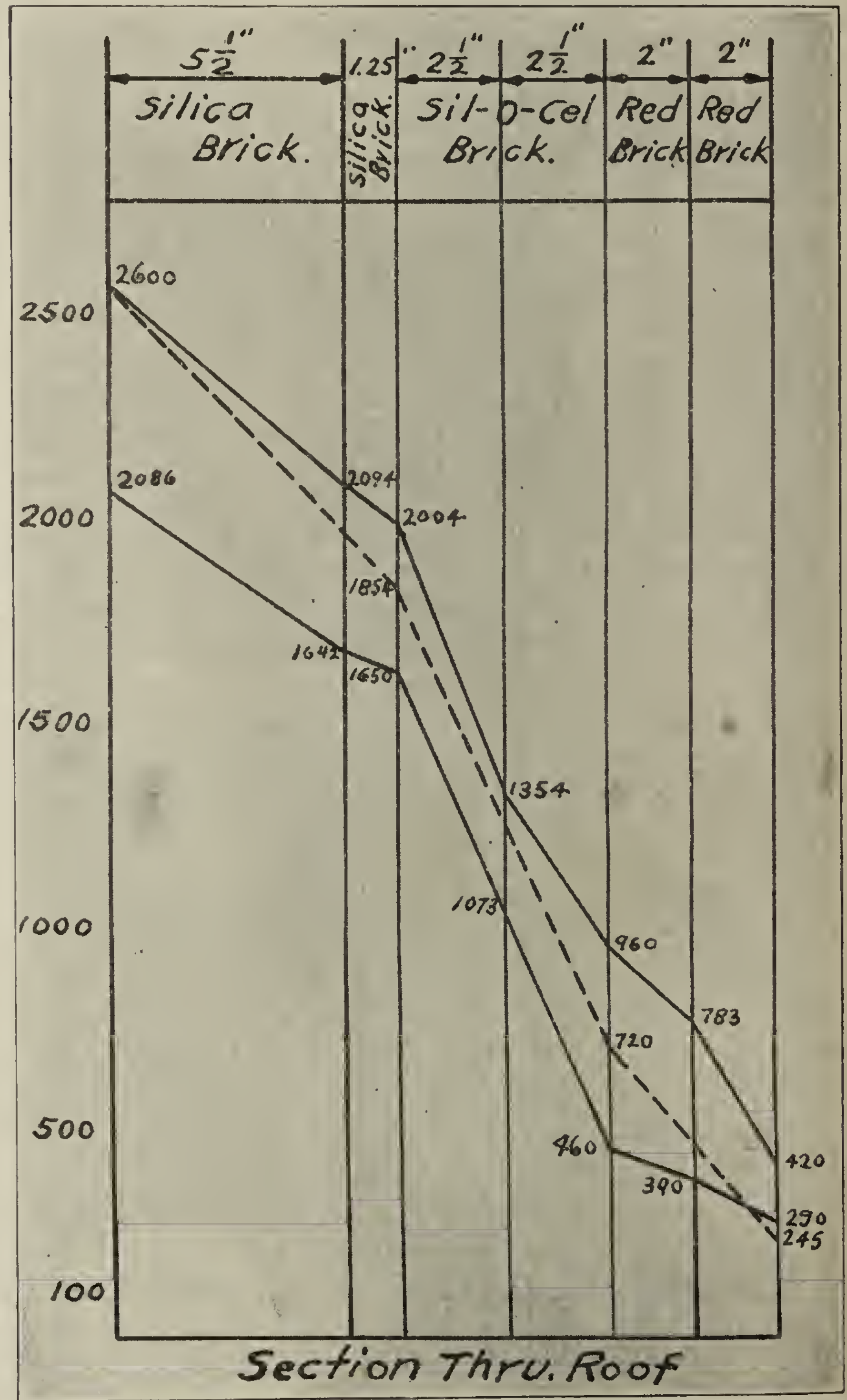
These Curves Show the Temperature Drop Thru a Wall Made of Sections of Different Material and Which Is Subjected to a High Temperature on One Face. Full Lines Represent Actual Temperatures, Dotted Lines Calculated Temperatures.

1. More uniform distribution of heat thruout the kiln with the consequent elimination of over and underburned pieces.
2. More complete temperature control.
3. Protection of the outer brick-work from violent temperature change and consequent cracking with its resultant air leakage.
4. Possibility of using thinner wall construction without excessive radiation losses.
5. Eliminating the necessity of over heating the hotter portions of the kiln in the endeavor to bring the cooler parts up to temperature.

Contrary to the practice in many of the industries in which the importance of insulation has been recognized and its principles effectively applied, the ceramic industry burns its most costly products, that is, products as a rule on which a great proportion of the labor required has been expended, so that kiln losses not only include materials which are largely a total loss, but also all the labor, direct and indirect expense, to say nothing of the effort required to prepare them for the burning operation. It is quite evident, therefore, that any effort made to reduce the number of rejected pieces by improving the kiln conditions will have a very important bearing on the ultimate reduction in the cost of the product.

There are two reasons, I believe, which are responsible for the fact that the ceramic industry has not taken more actively to the matter of insulation. The first is that up to a comparatively few years ago there were no materials readily commercially available for effective insulation which could be used in high temperature kiln construction, and secondly that the magnitude and the mechanics of heat losses and the practical and effective methods for their prevention had not been worked out and presented to the industry as an actual solution.

The following discussion is based upon actual experience in dealing with high temperature insulating problems in the industries previously mentioned and with about a dozen ceramic plants where kilns have been insulated and are today operating to the entire satisfaction and profit of their operators. It was expected that heat balances of an insulated and uninsulated kiln could be shown, but unfortunately this work could not be taken up in time to be included in this paper. It is hoped, however, that the discussion may elicit some work which has been done or which is in progress along these lines.



These Curves Show the Same Facts That the Preceding Graph Does, Except That They Represent the Temperature Drop Thru a Section of a Roof.

A. V. Bleininger,[1] has shown that in three commercial kilns the heat as fuel actually used in burning the contents varied from 5.70 per cent. to about 20 per cent. and that about 25 per cent. of all the fuel fired was lost thru radiation, of which 60 to 75 per cent. is preventable by proper construction.

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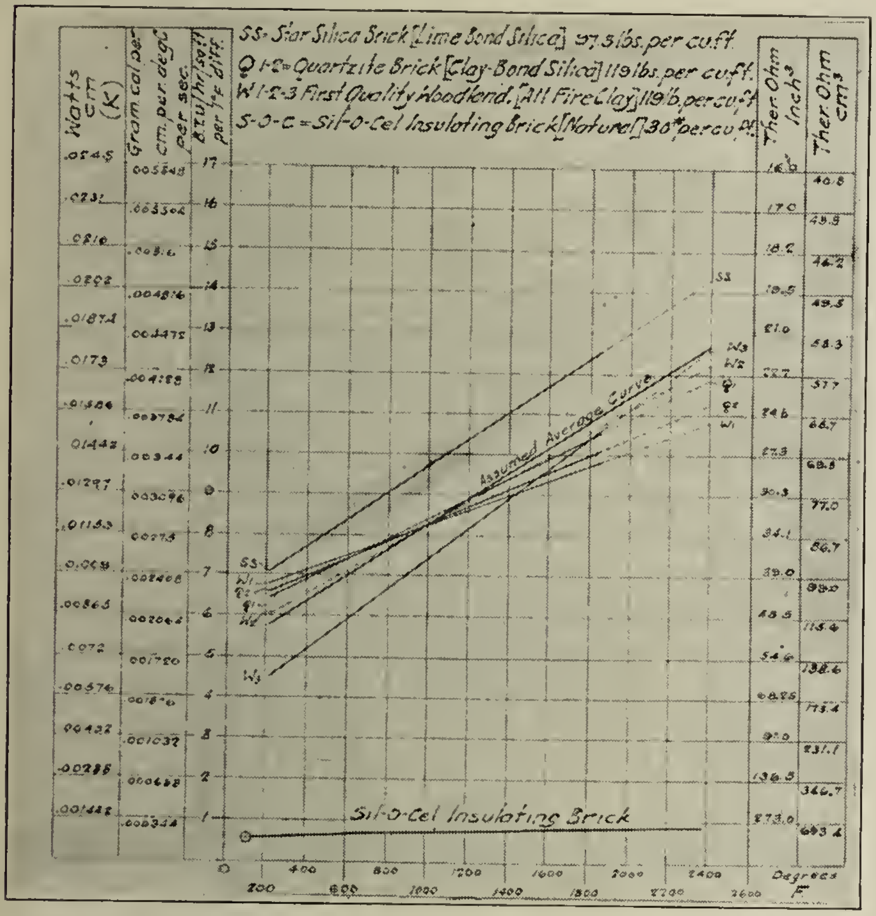
[1] A. V. Bleininger, Loc. Cit.

These figures have been the basis of an interesting calculation by Greaves-Walker as showing the actual preventable loss in burning brick in dollars and cents. With coal at $2.00 per ton which is an impossibly low figure, and allowing 1,200 lbs. of coal per thousand brick in a 30-foot kiln holding 65,000 brick, fuel amounting in value to $19.50, even at this low figure, is lost by radiation thru the walls and crown of the kiln at every burn of which three quarters is easily preventable.

In a new face brick kiln recently built at Streator, Ill., in which the crown has been insulated, T. N. McVay[5] reports to consistently burn brick with 250 lbs. of coal per thousand brick, less than any other kiln in this plant. This is attributed largely but not wholly to the effect of insulation.

PROPAGATION OF HEAT

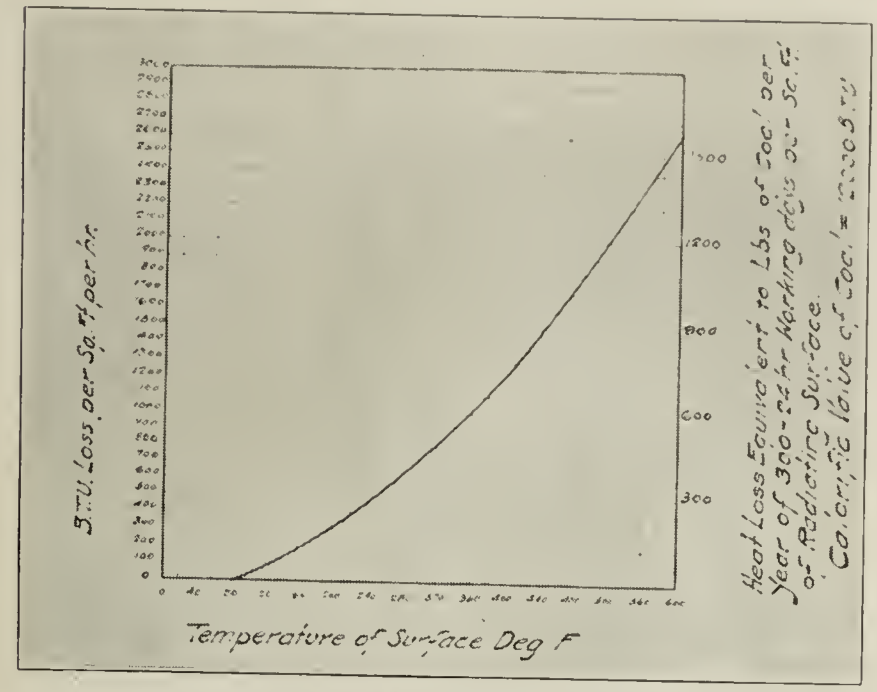
Heat is a form of energy consisting of molecular vibrations of a periodic character and subject to the general laws of wave motion. It can be reflected, refracted and dispersed by creating the proper condition. In other words, by the proper mechanical manipulation we can increase or decrease, within certain limits, the amount or rate of heat flow. One of the most common ways of doing this is by introducing alternate layers of materials having different heat-transmitting values, thus breaking up or changing the wave length. The introduction of air cells or voids within the body is a most effective method of accomplishing the reduction of the conductivity, tho large voids have the effect of propagating heat by convection and radiation. The density of a body may be taken as an approximate criterion of its heat conducting capacity.



The Comparative Thermal Conductivities of Ordinary Brick and Sil-O-Cel Insulating Brick Are Represented on These Curves.

Heat is transferred from one place to another by three different methods—conduction, radiation and convection.

Conduction is the action taking place in the transfer of heat in which the heat energy is passed along from a particle at a higher temperature to one at a lower temperature by virtue of their contact. While this method of heat transfer applies to the three states of matter, it is of magnitude only in solids.



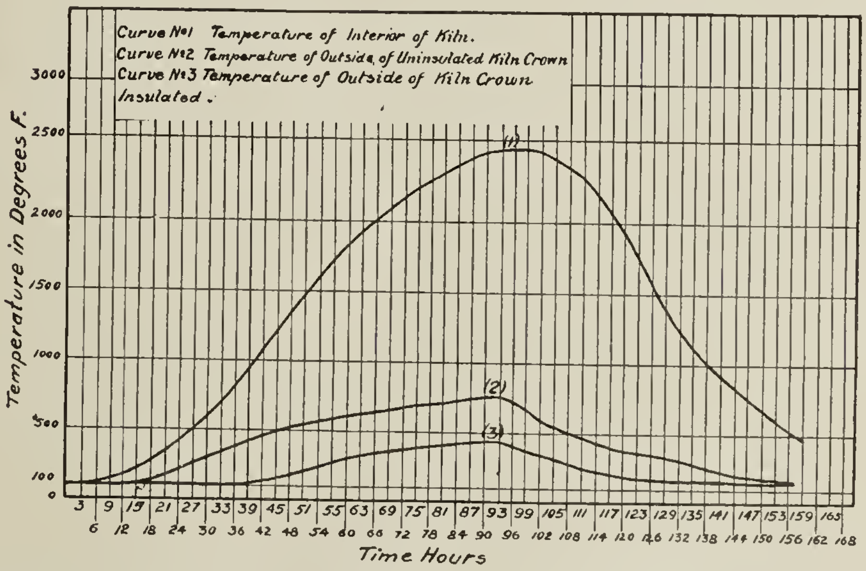
Curve Showing Heat Losses from a Heated Furnace Metal Wall at Various Temperatures. The Surrounding Atmospheric Temperature Is 70 Deg. Fahr.

Radiation—By radiation heat is transferred from one body to another without any material agency by wave motion; this applies only to the gaseous state of matter.

Convection is that process of heat transfer in which some portion of the body whose temperature is raised moves to another place in the medium where the temperature is lower, tending to raise the temperature of the medium. This method of heat transfer is, therefore, limited to liquids and gases. Ref. 6.

RATE OF HEAT FLOW

The amount of heat conducted thru a unit area from one part of the body to another is proportional to the thermal conductivity of the body thru which the heat passes and inversely proportional to the distance between the two parts of the body. In other words, the conduction of heat thru a solid body from one place to another is a direct function of the conductivity of the body and the difference in tem-



The Amount of Heat Lost Thru a Kiln Crown When Insulated and Uninsulated Is Clearly Shown by Curves Nos. 2 and 3.

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[5] T. N. McVay, Loc. Cit.

[6] Ref. Bureau of Mines, Bulletin 8. "Flow of Heat Thru Furnace Walls."

perature of the two planes, and an indirect function of their distances apart. This is identical with Ohm's law for transfer of electrical energy.

The heat transferred from one body to another by radiation is proportional to the difference of the fourth powers of the absolute temperatures of the two bodies. While this is strictly true only of the ideal "black-bodies," the variation is so small that, for all practical purposes, this relation holds good in ordinary procedure.

This Tunnel Kiln Is Constructed with Hollow Walls, Which Will Be Filled with Insulation Powder.

HOLLOW WALL SPACES

This relation indicates why a hollow-wall space is an effective insulator in low temperature work, such as refrigeration, etc., whereas in high-temperature operations the loss of heat by radiation thru a hollow-wall space is so great that its insulating effect is less than if this wall space were filled with material of rather high thermal conductivity. This is especially true if the air space in the hollow wall is near the furnace side and becomes highly heated. This is entirely contradictory to the general belief that, since air is a poor conductor of heat, air spaces built into the walls of a furnace will greatly reduce heat loss by radiation and convection. While the heat does travel very slowly thru the air by conduction, it leaps over the air space readily by radiation, because the quantity of heat which passes across the hollow space is a function of the fourth power of the absolute temperature of the surfaces enclosing it, which loss is enormously increased by rise in temperature.

KILN WALLS

In general, in high-temperature wall construction, there are two separate and distinct factors which must be considered to produce an effective wall.

The first of these is to provide a material having the ability to resist the action of high temperatures, sufficient mechanical strength and, possibility, the property of resisting corrosive slags, gases, etc., without spalling or being eroded.

The second is to prevent the excessive loss of heat due to conduction from the interior of the wall to the outside where it is lost by radiation or conduction.

It is rare that a good refractory material is an insulator; usually it is necessary to augment or back up the refractory with some material having a much lower heat conducting capacity.

The three most important points in considering kiln wall construction are[3]

1. A wall of sufficient thickness to withstand the strain.
2. A sufficient thickness to prevent excessive heat loss.
3. A wall sufficiently thin to conform to good fire-box design.

Walls vary greatly in kiln practice depending upon how much consideration has been given each of these points. In a thin wall the concentration of heat in a deep fire-box is avoided, but excessive wall radiation results. On the other hand in excessively thick walls the loss is reduced but higher cost and repair charges are entailed.

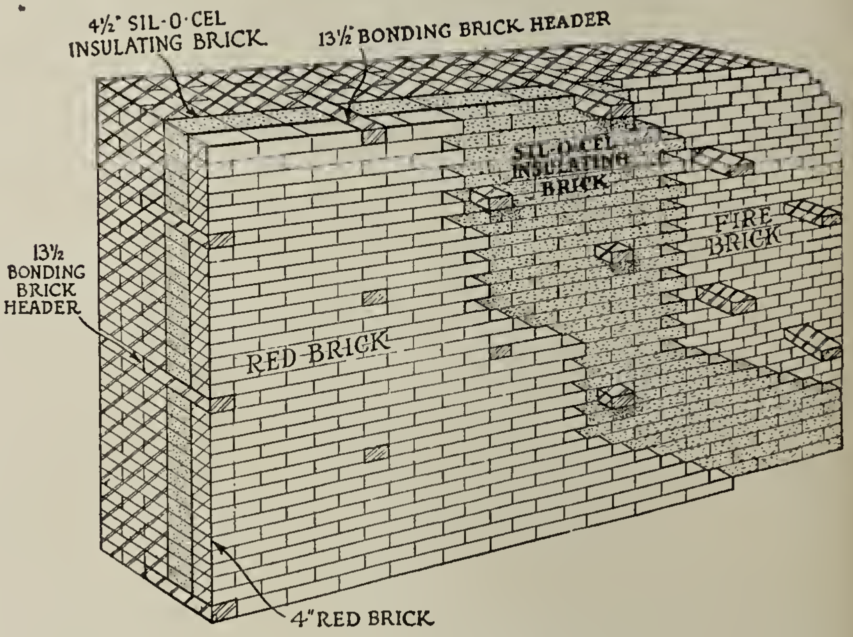
In determining the thicknesses of walls, Greaves-Walker's article points out that thin straight walls are the best if they can be insulated, as in this case the fire-box is thrown inside the kiln and the fuel is not wasted by heating up and burning out the walls. The setting space lost by projecting the fire boxes into the chamber while, a considerable item, cannot be compared with the saving of time, fuel and repairs during the life of a good kiln. If an uninsulated wall is built, it must be as thick as possible and still in accord with good fire-box design.

TEMPERATURE GRADIENTS IN WALLS

The temperature gradients and heat flow in a wall may be calculated within fairly close limits if the temperatures on the hot side of a wall and the thermal conductivity of the various components of the wall are known. For example the temperatures shown on the slide were calculated as shown by the dotted line and the solid lines determined by actual measurement from a furnace constructed and operated under actual working conditions.

REQUIREMENTS OF INSULATORS

The requirements of the insulating backing for the more refractory lining are rather severe. An ideal material would have the following properties: It should have an extremely high insulating value, and be sufficiently refractory so that no fusing or excessive shrinkage would take place in that portion which is in direct contact with the highly heated refractory wall. It should not be decomposed or be changed greatly in volume at the temperature, and it should, furthermore, be of light weight, unaffected by moisture, of convenient form, readily applied by unskilled labor and low in cost. It should be of such composition as not to react upon or attack either the refractory material or the metal shell of the container, even in the presence of moisture; i. e., it should contain no free acid radicals, and should not be broken or caused to settle by vibration or heat. It should not have high expansion, and it should be sufficiently elastic to



Showing the Kind of Brick Bond Construction Which May Be Used When Insulation Brick Are Placed in the Wall.

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[3] Ref. A. F. Greaves-Walker Loc. Cit.

take up strains between the lining and the shell produced by temperature changes.

While this is a rather formidable array of requirements, there are products upon the market which fulfill practically all of them.

DESCRIPTION OF INSULATION

The requirements of an ideal insulator being known, it remains only to select such an insulator as apparently most nearly meets these requirements.

A mineral possessing remarkable non-conducting properties, called in the crude form "Celite" is the raw material from which the commercial forms of Sil-O-Cel insulation are made.

Celite is a mineral of highly siliceous composition and of very light weight, and occurs at Lompoc, California, in an exceptionally pure state. It is composed of numerous hollow cells, and weighs in its natural rock form, air-dried, from 25 to 30 lb. per cubic foot. When this material is ground properly, it weighs but 8 lb. to the cubic foot, and has a thermal insulating power of about nine to twelve times the insulating power of ordinary fire brick. In other words, a one-inch layer of this material is the equivalent in insulating value of from 9 to 12 inches of fire brick. The internal thermal conductivity of these brick vary between 0.5 and 0.8 B. t. u. per square foot per hour, per degree Fahrenheit difference in temperature, between ordinary temperatures and 1,800 deg. Fahr.

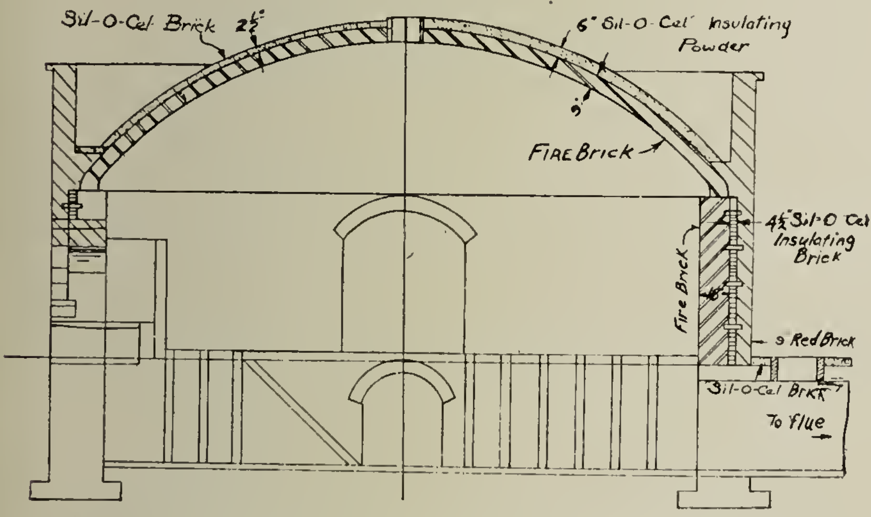
Being almost pure silica, its melting point is high, 2930 deg. Fahr. (1610 deg. C.) as reported by the U. S. Bureau of Standards, and it is not affected by temperatures which completely destroy other forms of insulation.

Brick and blocks of various sizes and shapes are prepared by sawing the natural material by means of gang saws. Standard 9-in. straight "Sil-O-Cel" brick made from natural Celite weigh about 1¾ lb. each. In crushing strength these brick withstand over 400 lb. per square inch.

WALL CONSTRUCTION

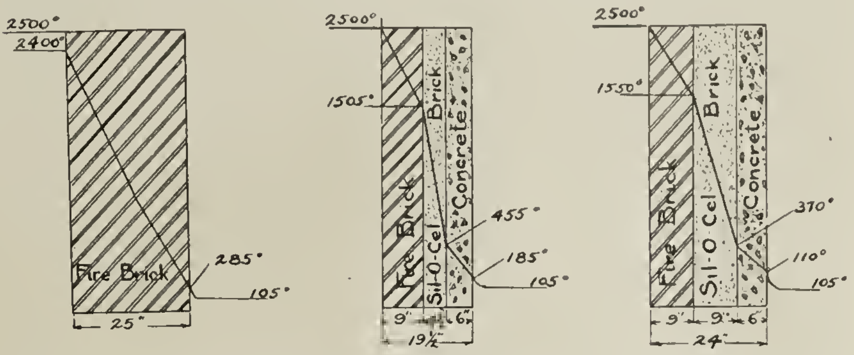
For high temperature wall construction the following methods of bonding the refractory insulating brick and red brick have been found effective. There are, however, many cases in which this form of construction is not desirable and they are here shown merely as suggested forms of construction from which the one best adapted to the requirements may be selected.

First, bonding brick construction: In this construction a 13½ in. bonding brick header is run thru from the fire brick to the red brick continuously every fourth, sixth or eighth course depending on the strength desired. These are also placed, staggered thru the wall as shown in order that the strains may be distributed as uniformly as possible, to prevent cracking.



Cross-Section of Kiln, Showing Proper Method of Insulating the Crown and Walls.

Second, short bond construction: A nine-inch fire brick header is used in the same manner as that indicated under the bonding brick construction, except that it does not project into either the fire brick or red brick wall as far.



Results Obtained from Actual Tests on the Heat Flow Thru the Walls of a 500 H. P. Boiler, Consisting of Fire Brick, Insuating Brick and Concrete, and of Fire Brick Alone.

Third, metal walls ties: In this construction either standard metal walls ties or half inch wire mesh screen is laid the entire length of the setting, securely bonding the inner and outer walls together.

Of course in kiln construction it is sometimes desirable not to bond the walls and in this case the insulation is bonded to either the fire brick or the red brick side. The header brick are used as indicated, but not binding.

Either insulating brick or powder may be used effectively in this construction, depending upon the requirements.

INSULATION OF CERAMIC KILNS

The type of insulation most common to periodical kilns is that using 2½ inches insulating brick over the crowns or 4 to 6 inches of Sil-O-Cel powder either covered by a thin layer of cement or a course of red brick if exposed. A course of 4½ inches of insulating brick may be put next to the other course of brick in the side walls and preferably bonded.

This construction has been found to reduce radiation losses by from 50 to 75 per cent. and gives remarkable improvement in temperature distribution and control. Tests of kilns insulated in this manner show that in the operation of a thirty foot kiln the fuel saving will be about $230 per year per kiln with coal at $2 per ton, and the cost of insulation is about one-third of this amount.

A test showing the difference in temperature of the outer surface of the crown of a pottery kiln before and after insulation indicates the amount of unproductive heat which escapes from the top of the kiln, and the amount of forcing the hotter parts of the kiln is required to withstand in order to bring the temperature of this part up to heat, counteracting the heat lost solely by radiation and convection.

The amount of heat lost from the surface of a kiln at various temperatures is shown in one of the curves given and indicates the extremely rapid increase in loss with the increase in temperature.

INSULATION OF WASTE HEAT EQUIPMENT

The growing use of waste heat for operating boilers, dryers, preheating kilns, etc., also demands that not only this equipment itself be insulated, but that every effort be made to deliver the heat to the equipment at the highest possible temperature by properly insulating the flues and ducts, in fact to obtain proper operation of this system insulation of all the equipment from kiln to the final stack is imperative. The cement industry has within the past two years made wonderful strides in the utilization of their waste and the success of some of the largest installations owes its high thermal efficiency to effective use of insulating materials.

BOILER WALLS

An idea of the heat flow thru insulated and uninsulated walls is shown in an accompanying graph. These results were obtained by actual measurements made under the most careful conditions, from the walls of a 500 H. P. boiler, consisting of fire brick, insulating brick and concrete and of fire brick alone. It is interesting to note that the concrete setting protected with insulating brick has now been in operation for a considerable period and has proven that beside reducing the radiation loss considerably it also prevents infiltration of air thru setting by preventing cracking of the wall due to uneven temperatures. These facts together with the figures were brought out by Joseph Harrington[7] in "Insulation of Boiler Settings."

LIME KILNS

The various forms of construction applied successfully to shaft type of lime kilns are of interest in indicating the flexibility of this type of construction with insulating brick or powder; both having been used in this type of kiln.

CEMENT KILNS

The discussion of kiln insulation would not be complete without reference to portland cement kilns. Insulation of this equipment had been thought impossible until recently and after exhaustive tests at two of the largest plants in the country, surprisingly good results were obtained by using 2½ inches of Sil-O-Cel insulating brick as a backing for the usual highly aluminous fire brick. The kilns are still in operation with a marked increase in capacity, better heat control and a great saving in wear and tear on the shell.

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(7) Joseph Harrington, "Insulation of Boiler Settings," Power, Vol. 45, No. 13—March 27, 1917.

GOTHAMITES URGE ADMINISTRATION *to* GRANT SUBSIDY *to* BUILDING INDUSTRIES

BUILDING INTERESTS thruout the country, and especially in New York and vicinity, have been trying to keep up supply sufficient to meet Government and private building demand, and at the same time hold their yard and mill labor in the face of the very much higher scales offered by neighboring ship yards and munition plants having direct Government orders. Their efforts have proved unavailing, however, and, coupled with heavier drafts of men for army and navy purposes, have about reached the conclusion that the only way they can hope to meet present and peace time demands is for the administration to either name a building material dictator or administrator, or to grant some form of subsidy to the building industries, says The Dow Service Daily Building Reports.

In fact, there have been reports for some time in the building and allied trades that the administration at Washington is considering such a course in the light of almost certain stringencies that are sure to develop if the war continues. Even if it stops, the whole world will come to America for its building material supply, and there are demands even now for equipment and commodities entering into building and construction in China, Europe, South America and Canada that would absorb the entire manufacturing capacity of plants catering to construction needs thruout the United States. Some voice on this subject was heard at the convention of the nation's building industries and professions at the Engineers' Societies Building on Friday, June 14.

PROTECTION NEEDED FOR BUILDING INTERESTS

The situation is all the more acute because of the growing realization that this country's industries are not capable of supplying world markets without expanding their plant capacities, and this means new building construction. Without fuel and sufficient labor and classed as a non-essential, thereby finding it difficult to obtain either cash or credits from banking institutions, the building material interests of the country are facing a situation that, they feel, requires immediate consideration if the Government building program is going to continue to absorb not only current outputs, but all its reserve stock besides. One of the largest brick distributors in New York passed into receivership last week. Only five per cent. of the brick plant capacity along the Hudson is operating because Government ship yards in the vicinity of Newburgh, the heart of the brick-making section, are able to pay wages that brick manufacturers cannot afford to pay. The Lehigh and Hudson district cement mills face the same problem. The plaster industry, an important factor in fireproof construction, is practically at a standstill on the eastern seaboard, and in fact all departments are facing a most serious situation, which will reach a stage of acute aggravation by next spring unless there can be arranged some plan of protection, subsidy or co-ordination in the remainder of the rapidly waning season.

In one department, namely, the composition roofing market an attempt has been made to offset this condition to a limited extent, at least, by eliminating all private brand business and standardizing its entire output, thereby effecting a temporary reduction in prices. But this plan is not applicable to every line. One-ply prepared roofing under this plan has been reduced from $1.35 to $1.25, two-ply from $1.72 to $1.60 and three-ply from $2.08 to $1.70 for 35, 45 and 55-pound products. Slate surface roll has been cut from $1.92 per square to $1.70. The same in asphalt red, 85-pound quality, less than car lots, is quoted at the former rate of $2.25 and $2 for car lots, but the heavier line in red is now $4.75, whereas it was $5.33, and the green at $5 instead of the old price of $5.35. Insulating paper in 20-pound rolls of 500 feet is now $1.60 instead of $1.63. The same in 35-pound weight is $1.90 instead of $1.95, and the extra heavy, 45-pound rolls, is reported at $2.30 instead of $2.37.

HEAVY PRESSURE ON CERTAIN LUMBER LINES

Lumber is one of the most vital factors in the Government's program, and the current lists show something of the pressure upon certain lines. Cypress is up $2; first and second grades of gum are up $2; quartered all red gum, 4/4; first and seconds, however, is off $1. Pennsylvania hemlock is quoted at $1 higher, as is West Virginia products. Clear quartered white oak flooring is up $16, making the new price $100 instead of $84. Select quarter sawed oak flooring and select red are both up

$8.50, while clear quartered red is quoted $15.50 higher than last month.

Factory flooring is now quotable for the first time this year, showing something of the tremendous demand the Government has levied upon the sort of wood flooring that will not splinter under factory use. The price today as compared with the price last December, shows that 2-inch is now bringing $40.25, as against $34; 2¼-inch takes $42.25, as against $37, and 3½-inch is listed at $44.75 instead of $39.50.

These are the new price advances in spruce from the Adirondacks and Canada, reflecting the heavy demands the Government has made upon certain sizes, resulting in wide fluctuations in quotation levels, depending upon how badly the reserves have been drawn upon: 1x4, 12 and 13 feet, up $2; 1x6 and 1x9, $1; 1x10, $2; 5/4x2½, $3; 5/4x3, $5; 5/4x4, $4; same by 5, $4; same by 6, $5; same by 7, $2; same by 9, $2; same by 10, $2; 2½x4, $2; 2x5, $1; 2x6, $2; 2x10, $2 and 3x4, 3x6, and 4x4 in. are all up $5.

COMMON BRICK SHORTAGE

Common brick is in no market at all, there being only two barges on hand on June 8 and two more scheduled to come in June 10. The normal arrival should be nearly twenty with a reserve on hand of almost a dozen barges at least The material is bringing between $10 and $11 with $10.50 about the usual price per thousand, wholesale. Production of this commodity normally in excess of a billion brick a year is today not more than 300,000,000 for the year in spite of the fact that Portland cement is likely to have a much heavier drain upon the industry's limited output in the light of immediate future demand, which is greatly accentuated by the under-built condition of the country, today, not only in the matter of housing, which the Government already has ably provided for as far as munition workers are concerned, but in industrial and commercial, hotel and apartment structure.

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Iowa Manufacturers Meet at Mason City

The Permanent Buildings Society, headquarters at Des Moines, Ia., held a monthly meeting at Mason City on Wednesday, June 12. There was a fairly good attendance of members of the Society and some very important matters of timely interest were discussed. The most prominent of these was the new freight rates which go into effect on June 25.

Examination of new intrastate rates revealed the fact that these were to be increased from eighteen to seventy-eight per cent., the largest increase falling upon the short haul. In other words, a car of brick which is to be hauled five or ten miles will cost approximately three quarters as much again for transportation as it has cost in the past. This will hit the Iowa manufacturers hard because most of their business is within a modest shipping radius of the plant. Intrastate rates, it was stated, would suffer a uniform advance of two cents per hundred weight on clay products.

It is evident to all that under these circumstances and with the price of coal being increased because of higher rates, it will be necessary for manufacturers to get a better price for their ware.

Secretary C. B. Platt announced that the fuel administrator in Iowa has ruled that Iowa clay plants can use Iowa screenings without restraint where it can be demonstrated that the consumption of such fuel is necessary in order to fill orders on hand. If this is the case, clay products plants in Iowa will be permitted to operate to a larger capacity than the curtailed production if Iowa screenings are used.

The meeting of the Food Commission at the Des Moines Chamber of Commerce on Saturday, June 8, with regard to a silo campaign, was discussed. The fact was brought out that the Iowa Food Commission, co-operating with the Iowa State College, and other agricultural interests, would put on a campaign in the near future to secure the erection of more than eight thousand silos in the state. This is along the lines of the silo campaign in Indiana where the goal is ten thousand silos. This should offer a tremendous opportunity for silo tile manufacturers in the Hawkeye state since silo tile can be manufactured without restriction and commands a good price.

Prior to the meeting, the visitors were entertained at luncheon at the Mason City Country Club where they were the guests of the Mason City clay products manufacturers. Harry Keeler, of the Mason City Brick Co., played well the part of host before lunch and created a great deal of amusement when he took seven or eight amateurs out on the golf course and proceeded to teach them the game.

After dinner in the evening six of the party motored with Charlie Carhart, of the Sheffield Brick and Tile Co., Iowa's dare-devil driver, to Sheffield where two new plants that are being erected at that point were inspected. Due to daylight saving and the normally long days of June, it was possible to wander about the plants as late as 9:30 P. M.

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Inventor of Hallwood Block Passes On

Henry Spencer Hallwood, one of the best known business men of Columbus, Ohio, and the inventor of the Hallwood block, died at his home, 776 Franklin Avenue, suddenly, June 10.

Mr. Hallwood was a well known figure in brick and clay products circles. It was about fifteen years ago that he invented the Hallwood block. He organized a company near Columbus for the manufacture of the block and later licensed many brick plants over the country under his patent. Later he organized the Hallwood Brick & Tile Co., with a modern plant located on Seventeenth Avenue, Columbus. He was president of this company for some time but recently resigned.

The deceased was born near Stockton Heath, Cheshire, England. On his wedding trip in 1874 he came to Canada and later went into business in Charleston, W. Va. He was a resident of Columbus for about thirty years.

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Will Clay Products Find Market Here?

It is reported that the War Department has awarded a contract to the Butterworth-Judson Corporation of New York to build a seven-million-dollar picric acid plant at Brunswick, Ga. It is understood that the plant, when constructed, will cover about 500 acres of land in buildings necessary for operation. It is anticipated that a force of five thousand men will be necessary in the construction work and the operating force will consist of about six thousand men. Using the multiple of 3½, which is the conservative one used by the United States government, it will mean an increase in population for Brunswick of 21,000 people, which will just about double its present size.

Altogether 1,400 acres of land is to be acquired while the plant buildings will require only about 500 acres. The additional acreage to be acquired will be used largely for housing purposes both during the construction of the plant and later after it begins operation. A plan has already been conceived for solving what at present is an intricate problem with the shipbuilding plants and other new industries—the housing question. According to reports, it is planned to use for temporary purposes at least, a system of cantonments similar to those now being used at the various military camps in the country for the use of construction forces. Later on, when the workers are permanently located, various homes, stretching all the way out on the road from Brunswick will be constructed.

While the plant is to be used during the duration of the war for manufacturing picric acid, it is contemplated that after the war, the plant, together with similar ones in the country is to be used for the purpose of manufacturing chemicals or dyes necessary for domestic consumption. With this in view, the department of the interior is already making a survey of the dyes and chemicals imported to this country prior to the present war with the object of making productions of American dyes and chemicals at least equal to the domestic demand when the war shall be ended.

Work has already been started in laying out the survey and it is understood that the construction force is also ready to begin work on the main buildings.

Besides this big enterprise it is also expected that a large steel shipbuilding plant will be located at Brunswick which, if it is true, will add a great deal more to the construction work which has already been outlined.

* * *

D. E. Humphrey Ventilating Engineer

D. E. Humphrey, formerly general superintendent of the Deckman-Duty Brick Co., of Cleveland, Ohio, is now in charge of the heating and ventilating department of the Goodyear Tire & Rubber Co.

Mr. Humphrey writes under date of June 9: "With warm weather approaching and the company's eighty-seven buildings to ventilate, you will appreciate the cause of my tardy answer to your letter. I certainly do not want to lose track of my many friends in the ceramic industry. Even if my work is somewhat a departure from the clayworking field, I shall attend the conventions as often as possible. I shall endeavor to spend a day at least at the American Ceramic Society's meeting at Zanesville."

Mr. Humphrey, it will be remembered, left the Deckman-Duty Brick Co. to engage in building construction at Akron. Since that time he has made the change above mentioned.

* * *

WHEN *is a* CHECK *a* RECEIPT?

THERE ARE A LARGE NUMBER of business men who do not request a receipt when they pay an invoice, thinking that because they pay all their bills with checks, the cancelled check in itself will serve as a valid receipt and be sufficient evidence that the bill has been paid. Of course, a check is a valid receipt, providing it is written in such a manner as to satisfy the legal requirements for this purpose. But the business man is usually very positive that under no circumstances can he be compelled to pay a bill twice, because he can at any time produce the checks with the payee's endorsement thereon. However, the fact remains that more than once have business men been compelled to pay bills twice, even tho they did pay by check; altho it was thru their own negligence that this happened and that the checks did not serve as receipts for the payments which they claimed.

CHECK NOT ALWAYS A RECEIPT

The fallacy of the idea that a check is always a receipt for the payment of a bill or as payment on account, when there is nothing written on the check to show for what it was issued, was very well illustrated in a case recently decided in one of the higher courts.

According to the evidence produced in this case, Robbins purchased merchandise quite frequently from the Thyrex Company. He did business with this firm for several years, making all payments by check, and never bothering about receipts. Frequently he went to the office of the Thyrex Company to purchase material, and at the same time gave his check in payment of the goods purchased This was considered to be a cash transaction. At other times he had checks cashed at the company's office, which was merely an accommodation accorded to him as a customer.

Then, one day he received a statement from the Thyrex Company together with a letter requesting payment of a $100 balance long overdue. He immediately wrote a letter in reply, stating that he was not indebted to the Thyrex Company, and placing emphasis on the fact that he had all his cancelled checks on file, and could produce these as receipts. The Thyrex Company later mailed Robbins itemized statements, and also made further requests for settlement of the account. He gave the matter no further attention, claiming that he had paid for everything he had ever purchased from them, and feeling secure that with his checks as receipts he could never be forced to pay their claim.

LAWSUIT FOLLOWS NEGLECT

Finally, the Thyrex Company started suit, and at the trial Robbins produced the checks as evidence of the payment of the account. However, much to his astonishment the court upheld the claim of the Thyrex Company, saying: "Nothing appears, either on the checks or the stubs, to indicate for what purpose the checks were given. Neither appellee nor appellant testified definitely to what transactions the checks relate. The Court has read the evidence carefully and could not say, with any degree of certainty, that either of the checks should have been credited to the account. In fact, there are many circumstances in the record indicating that they had reference to independent transactions. It is urged insistently that the burden of proof is upon the appellee to show what application was made of the funds derived from the checks in question; that, having received and cashed the checks the burden of proof is upon them. But the burden of proof is upon the debtor to maintain his plea of payment. Unless the checks show upon their face for what purpose they were given, or there is some other positive evidence as to the transaction to which the checks were referable, we think the burden continues upon the party pleading payment to show that the checks were given in payment of account. The checks in this instance being referable, under the conflicting testimony, to either the account or independent transactions, we cannot find, by a preponderance of the evidence, that the checks were given in payment of the account."

Of course, Robbins had to pay the $100, and maybe as he claimed, pay it twice. Still, if he had exercised ordinary care, either requesting a receipt for each payment, or marking on each check for what it was given, he would have been safe.

The simplest method for the business man to protect himself when making payment by check is to write on the face of the check the date and the amount of the invoice in payment of which it is given, or if it is given as payment on account, it is merely necessary to write the two words, "on account."

Rubber stamps for this purpose can be purchased for a very small sum, and they are very convenient. These rubber stamps are usually of the following form: "This check is in payment of the following listed invoices:", and leaving a small space underneath in which to insert the dates and amounts of the invoices.

With such protection there is little probability that the business man will be called upon to pay any invoices the second time, or that he will become the defendant in a lawsuit for this purpose.

The firms that issue trade acceptances usually specify the items for which they are drawn, and the business man should not place his signature on an acceptance unless this is the case.—*Ralph H. Butz.*

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Organization to Boost Silo Sales

C. B. Platt, secretary of the Permanent Building Society, has been made president of an organization of Iowa clay producers whose sole purpose is to foster the building of silos in Iowa.

A number of plants were represented at a meeting in Des Moines, June 8, when the organization was effected. The new organization will work in close touch with the State Council of Defense and all propaganda and advertising will go out under the name of the Council of Defense.

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Cleveland Building Strike Seems Settled As Trouble Looms Again

Just as the different factions engaged in the annual spring dispute about labor and wages in the building trades in Cleveland, Ohio, seemed settled, someone apparently has thrown a wrench into the machinery and the controversy seems about to be resumed. The laborers' union has put the fly in the ointment this time. Less than a week ago the pact between the Building Trades Council and the Building Trades Employers' Association was signed, in which was included a clause that would do away with strikes and lockouts for three years. Now the laborers apparently will not submit their wage disputes to arbitration, and demand still higher wages than those offered by the contractors.

Thoroly disgusted with their efforts to get building going in the Cleveland districts, contractors who have recognized union labor thruout, had announced their intention of going to work with the men who really want to work, some time in the week of June 10. This was to overcome the enforced idleness upon several skilled trades caused by the tactics of the common laborers. Of special significance at this time is the fact that much government factory work here is held up by the laborers' action. Of course they are well supported by the Building Trades Council officials which say they will insist that the demands of the laborers, 60 cents an hour, instead of the 55 cents offered and agreed upon in the three year pact, be met by the employers.

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A HOLLOW TILE CIRCULAR BARN

B. J. HOLTKAMP, of Henry County, Iowa, is the owner of the hollow tile circular barn shown in the accompanying illustration, according to the "Iowa Homestead."

The basement of this barn is for live stock and the second story is used for hay, grain and for machinery. There is room for 500 bushels of oats, and in addition there are a few small bins that will hold 100 bushels. At least fifty tons of loose hay may also be stored in the mow.

This Hollow Tile Circular Barn was Erected on the Farm of B. J. Holtkamp at a Cost of $1,900 and is Giving Excellent Satisfaction.

Mr. Holtkamp finds this circular barn very convenient in caring for stock, as all the animals face the center except some of the cattle. It is very handy to mow back the hay, which is quite a considerable task in the rectangular barn. There are 88 feet of hay track, so that this practically does away entirely with mowing back the hay. There are no corners to be dealt with in this barn and, of course, the structure is very strong. In the building it is reinforced the same as a silo so that it cannot crack or get out of shape in any way. It is practically storm-proof. During the very cold weather of last winter, the live stock in this barn were just as comfortable as they would be in the pasture, and this in itself effects a considerable saving in feed.

The cost of materials for this barn, which is fifty-two feet in diameter, is given in the following table:

4,345 silo block 5x10x12 at 2½ cents	$ 108.52
Freight on same—two cars	31.42
Lumber	881.00
350 sacks cement at 55 cents	192.50
Eight barrels of lime at $1.40	11.20
Fifty gallons creosote shingle stain	64.62
Galvanized iron cupola and copper cable lightning rods	88.00
88 feet of hay track and hangers	75.00
Hardware	70.00
For cement mixing machine	12.50
Re-enforcing bars, wire and iron used	100.00
Carpenter work	210.00
Laying blocks (not including tenders)	56.00
Total	$1,900.00

It should be added that the blocks in this barn were bought at a bargain because they were made by a big silo company and were rejected by their inspector, but the slight imperfections did not hurt the blocks in the least for barn-building purposes. The forty yards of sand and gravel that were used in the construction of this barn were not mentioned in the list above because it was obtained near at hand and one team could haul five loads a day. The door frames as well as the doors are made of No. 1 cypress lumber and the doors themselves are double, with paper in between. No. 1 shingles were used, dipped in creosote.

* * *

Strike Causes Set-Back in Cleveland District

Resumption of activities in the brick and clay industry of Cleveland and Northern Ohio is now dependent upon the acceptance of the agreement between the Building Trades Employers' Association and the Building Trades Council. Members of the different crafts were to vote upon acceptance of the agreement, which is practically the same as that of last year, which was adopted after the now famous lockout, with a few minor changes in some of the clauses being made.

According to Robert C. Mitchell, assistant secretary of the Supply Dealers' Board of the Ohio Builders' Supply Association, the outlook is favorable for all trades going back to work, with the possible exception of the teamsters' union, which apparently has failed to come to a decision on the agreement.

Meanwhile yards are stocked up with supplies, ready to make deliveries in quick time as soon as the demand is placed upon them. At the Cuyahoga Builders' Supply Co. the opinion is expressed that indications for a big summer in brick and allied lines are good, despite the temporary setback caused by the strike. About 60 per cent. of the last year's business is now the prediction. One of the biggest outlets, it is pointed out, is in brick paving and sewer construction, which is being pushed as rapidly as the government permits. Lately, according to J. F. Leonard of the Cuyahoga, a sufficient number of good-sized jobs have developed to bring the outlet for materials up to the average predicted, even in spite of the slowness in operations due to the strike.

Slacking up in face brick distribution is also reported by John Harms, of the American Face Brick Co.

* * *

N. P. B. M. A. Holds Quarterly Meeting

The regular quarterly meeting of the Board of Directors of the National Paving Brick Manufacturers' Association was held at the headquarters of the association in Cleveland, Ohio, May 31, 1918.

Election of the Board of Governors and Alternates of the association from the several territories and the adoption of the constitutional amendments were duly certified, namely:

Representing Illinois, the Illinois Paving Brick Publicity Bureau; embracing the territory of Illinois and Missouri. Board member, C. C. Barr. Alternate, W. G. D. Orr.

Representing Indiana, the Indiana Paving Brick Publicity Bureau; embracing the territory of the state of Indiana. Board member, Walker W. Winslow. Alternate, H. C. Adams.

Representing Ohio, the Ohio Paving Brick Manufacturers' Association; embracing the territory of Ohio, West Virginia and Michigan and that part of Canada lying north and east of the great lakes. Board member, C. C. Blair. Alternate, F. L. Manning.

Representing the South, the Southern Paving Brick Manufacturers' Association; embracing territory east of the Mississippi River and South of Maryland, West Virginia and the Ohio River. Board member, W. M. Lasley. Alternate, B. A. Inglis.

Representing the West, the Western Paving Brick Manufacturers' Association; embracing the territory west of the Mississippi River to the Continental Divide, including all of the State of Minnesota and that part of Canada lying west of the great lakes. Board member, A. W. Shulthis. Alternate, G. E. Mosher.

The Board of Governors organized by the election of: president, C. C. Blair, Canton, Ohio; vice-president, Will P. Blair, Cleveland, Ohio; chairman of the board, A. W. Shulthis, Independence, Kans.; secretary, Walker W. Winslow, Indianapolis, Ind.; assistant secretary, Maurice B. Greenough, Cleveland, Ohio; treasurer, C. C. Barr, Streator, Ill.

The principal matters of interest discussed at the meeting were the recent orders of the U. S. Fuel Administration, the recent car service rules, and the order increasing freight rates. These subjects were referred to the War Service and Traffic Committees respectively, who will advise as to the course to pursue in these matters.

Standing Committees: Advertising committee, Walker W. Winslow, chairman; Traffic committee, J. G. Barbour, chairman; Membership committee, S. M. Duty, chairman, and Technical Investigating committee, Will P. Blair, chairman.

War Service Committee: C. C. Blair, chairman, W. P. Blair, John W. Sibley, W. H. Terwilliger, A. W. Shulthis, R. T Hutchins and Walker W. Winslow.

* * *

Ohio Brick Men Protest Freight Increase

One difficulty that the brick manufacturers and distributors face, is the increase in freight rates on all building material. Steps to deal with this new and serious problem have been taken in Cleveland, according to F. H. Chapin, of the Hydraulic Press Brick Co. In the opinion of Mr. Chapin the increase of 40 cents a ton on brick will tend to make longer shipments, since the increase is for every ton, regardless of its destination. Whether shipments are made from this city to Canton, Ohio, or to Minneapolis, the cost will be the same.

Meeting of the officials of the American Face Brick Association, the Hollow Building Tile Association and other organizations whose members are affected by this order, has been held and a course of action planned. A representative for these interests will be sent to Washington to endeavor to obtain a postpoment of action until the trade can be given a hearing. It is estimated by Cleveland brick interests that the 40 cents per ton on flat increase will make a general increase in brick hauling of 42 per cent. This increase is considered way above increases in any other commodity. It is claimed that the government is asking an increase of only 25 per cent. in other lines.

Similar protest is being planned by the paving brick interests thru the National Paving Brick Manufacturers' Association, according to Will P. Blair, secretary. Action will be taken following a discussion of the order by the traffic committee and the board of control. It is believed a protest will be entered against the increase of 2 cents per hundred on paving brick, and that a modification of the order will be sought, so that at least roads already under contract will not be affected. It is pointed out by members of this organization that certain localities and materials are not affected by the last 15 per cent. increase.

The action in Cleveland, according to information received from the headquarters of the association there, will be supplemented by a meeting in Detroit of the Highways Industries Association which will discuss the order as it will affect highway construction.

CURRENT LEGAL DECISIONS
AFFECTING BUSINESS

It is the Purpose of This Department to Serve to the Manufacturer of Clay Products a Brief Digest of Decisions Which Have Been Handed Down in the Courts During the Month, Enabling Him to Keep in Close Touch With Legal Developments

CREATION OF PARTNERSHIP

The consent of all the parties is essential to create a partnership.—163 N. W. (Mich.), 875.

CONTRACT VOID AS AGAINST PUBLIC POLICY

A contract void as against public policy furnishes no consideration for a promissory note.—163 N. W. (Mich.), 949.

STOCKHOLDER'S RIGHT TO INSPECT BOOKS

A stockholder has the right to inspect the books of the corporation at a proper time for proper purposes.—101 A. (Del.), 433.

RENEWAL OF INVALID NOTES

Where original notes were affected with illegality, their renewal was subject to the same invalidating consequences. —76 So. (Ala.), 281.

PAYMENT OF DEBT DUE WIFE

There was nothing inherently fraudulent in a bankrupt recognizing and paying a debt honestly due his wife, tho barred by limitations.—242 F. (U. S.), 441.

SHARES OF STOCK—NATURE OF INTEREST SHOWN

The property of shareholders in their shares and the property of the corporation in its capital stock are distinct property interests.—242 F. (U. S.), 605.

LOSS DUE TO NEGLIGENCE

It is a maxim of jurisprudence, when one of two innocent persons must suffer by the act of a third, he by whose negligence it happened must be the sufferer.—163 N. W. (N. D.), 834.

"TRACK DELIVERY" AND "DROP SHIPMENTS"

Carload shipments are known as "track delivery shipments," as distinguished from ordinary freight unloaded from the cars, known as a "drop shipment" delivery.—76 So. (Ala.), 282.

LIABILITY OF INNKEEPER

The innkeeper is liable for the goods of his guest, lost in the inn, unless the loss was due to the act of God, to that of a public enemy, or to that of the owner.—76 So. (Ala.), 302.

TENANT'S RIGHT TO REMOVE TRADE FIXTURES

A tenant has a right to remove trade fixtures, but he must do so while still in possession under his lease, unless the time for doing so has been extended.—163 N. W. (Mich.), 917.

WRONGS OF AGENTS OF CORPORATIONS

As a general rule, a corporation is liable, like a natural person, for the torts of its officers or agents committed "in the exercise of the functions in which they are employed." —76 So. (La.), 249.

RENOUNCING FORMER GOVERNMENT ALLEGIANCE

An applicant for naturalization must without reservation absolutely and forever renounce allegiance to his former government, and no divided allegiance is tolerated by the law.—242 F. (U. S.), 739.

THREAT TO SUE AS DURESS

Where debtor, executing a note, admitted the indebtedness, assertion by creditor of a positive intention to resort to legal proceeding if the debt was not immediately paid was not "duress" in law.—166 N. Y. S., 393.

CHECK SUGGESTING INQUIRY

One who accepts a corporation's check in payment for personal obligations of its president is put upon inquiry as to the president's right to use such funds, and is bound by whatever such an inquiry would have disclosed.—166 N. Y. S., 408.

GOODS INJURED IN TRANSIT

Where goods had been injured in transit, that consignee inspected the goods at their destination did not constitute an acceptance making a good delivery placing title in consignee, so as to require it to sue for their damage.—163 N. W. (Mich.), 934.

DEMURRAGE CHARGES

Under tariff rules providing that, if a consignee wishes his car held at any break-up yard or a hold yard before notification and placement, such car will be subject to demurrage, the consignee may direct that cars be held for orders, and cars so held are subject to demurrage charges.—166 N. Y. S., 237.

RELIANCE ON FRAUDULENT REPRESENTATIONS

One who undertakes to discover the truth of representations made to him is charged with the knowledge of everything which a proper investigation would disclose, and would not be justified in acting upon fraudulent representations merely because they were made to him.—196 S. W. (Tex.), 962.

CONTRACT OF EMPLOYMENT

Under employment contract providing that it might be canceled at any time by the employer if the services were not satisfactory to him, the right of determining whether the services are satisfactory is exclusively left to the employer, without liability to disclose his reasons.—196 S. W. (Mo.), 1024.

"DOING BUSINESS" WITHIN STATE

A foreign corporation is "doing business" within a state, where it is engaged in a more or less continuous effort, not merely casual, sporadic, or isolated, to conduct and carry on within such state some part of the business in which it is usually and generally engaged.—242 F. (U. S.), 543.

PEDDLER'S LICENSE

A salesman of a non-resident manufacturer of aluminum ware, soliciting orders from house to house by sample for future delivery by interstate transportation, is not subject to a peddler's license, as this would be an interference with interstate commerce.—163 N. W. (Mich.), 971.

FOLLOWING TRUST PROPERTY

So long as trust property can be followed the property into which it has been converted remains subject to the trust. If one mixes trust funds with his own, the whole will be treated as trust property except so far as he may be able to distinguish what is his.—76 So. (Ala.), 95.

TRANSPORTATION BEYOND DESTINATION

After the goods have reached their original destination the undertaking of the carrier so far as transportation is concerned is at an end, and any new obligation on its part to deliver at a different point must arise out of a new and different contract.—76 So. (Ala.), 309.

FORECLOSURE OF CHATTEL MORTGAGE

A chattel mortgagee, selling at private sale as authorized by the mortgage, is under duty to carefully guard the mortgagors' interest, and to sell at the best price obtainable with reasonable diligence, as the mortgagee is trustee for the mortgagors, and must be held to a strict accounting—196 S. W. (Mo.), 1075.

AWARD OF CONTRACT—REJECTION OF LOWEST BID

A municipality cannot lawfully reject the bid of the lowest bidder, where the law requires the awarding of a contract to the lowest responsible bidder, upon the ground that he is not responsible without giving him a hearing, and a finding that he is not responsible, rested upon proper facts.—101 A. (N. J.), 422.

ANTICIPATED BREACH OF CONTRACT NOT EXCUSE

The buyer was not justified in refusing to make payment for a shipment because the seller's insistence on the contract being carried out as made led the buyer to believe that the seller would refuse to make further deliveries, thereby breaking the contract, after the time limit expressed in the contract had expired.— 242 F. (U. S.), 587.

BULK SALES LAW IN WASHINGTON

Under the Washington Sales in Bulk Act, when a transfer of a stock of goods is not accompanied by a verified list of creditors, or where a large number of creditors is omitted from the list furnished, and the purchaser has notice thereof before the purchase price is paid, the transfer is fraudulent. —242 F. (U. S.), 602.

CONDITIONAL INDORSEMENT OF NOTE

One who signs or indorses a note as surety cannot, in defense to any action thereon, either by the innocent payee or any other bona fide holder for value, set up that the principal maker, to whom he intrusted the note, delivered it in violation of a condition that a certain other person or persons should first sign or indorse it.—93 S. E. (Ga.), 173.

CLIENT'S CONTROL OF LITIGATION

Notwithstanding a contingent fee contract between an attorney and his client, the latter retains complete control of the litigation, and he may at any time, for any reason satisfactory to himself, however arbitrary, discharge the attorney and settle with his adversary, and the attorney may recover only the reasonable value of the services rendered, even after judgment.—166 N. Y. S. 270.

SALE OF STOCK ON MARGIN

Where a stockholder contracts to carry stock upon margin, an agreement is implied that it shall not be sold to prevent the exhaustion of the margin until additional margin shall have been requested, and a reasonable time afforded for furnishing it, and a sale of the stock without notice to the owner is a breach of the broker's contract.—101 A. (Pa.), 461.

CUSTOMS AND USAGES

A custom, altho universal in a particular locality, which contravenes a positive statute, is invalid, and does not become part of a contract. Where a local custom contravenes a positive statute, before it can become part of a contract, it must appear that the party sought to be bound by it expressly agreed to waive his rights under the statute.—93 S. E. (Ga.), 157.

SIGNING CONTRACT UNREAD

One who signs an instrument written by the opposite party at interest therein, without reading it, when he is capable of doing so, cannot afterwards set up fraud in the procurement of his signature thereto, when no trick or artifice was resorted to for the purpose of inducing him to thus sign it, and it was not signed under any emergency requiring haste in its execution.—93 S. E. (Ga.), 233.

EMBEZZLEMENT BY AGENT

The fact that an agent is entitled to retain as his compensation a certain percentage of a fund collected for his principal does not, in case he refuses to pay over any of the fund, but uses it all for his own benefit, take the act out of the operation of a statute providing punishment for an agent who shall convert to his own use money of his principal which has come into his possession.—76 So. (Fla.), 334.

EMPLOYE'S FIDELITY BOND

When an employer has knowledge of previous dishonesty of an employe and accepts the assurance of an indemnitor of the employe's future fidelity without disclosing such knowledge to the innocent indemnitor, a fraud is committed against the indemnitor, and he is not bound, but this doctrine is predicated of knowledge only, and not upon failure or omission to gain knowledge since notice is not the equivalent of knowledge.—76 So. (Ala.), 103.

RETENTION OF CHECK NOT ACCORD

Where defendant agreed to purchase merchandise at a fixed price, and it was delivered to and retained by him, so that he became indebted for the price, but he claimed a set-off for defect in quality of some of the goods, and undertook to deduct the amount from the price, sending plaintiffs a check for the sum which was admitted due in any event, and writing that he was sending it as full payment, plaintiffs' retention of the check did not constitute an accord and satisfaction.—166 N. Y. S., 175.

CERTIFYING EMPLOYE AS NOT IN DEFAULT

Where an employer, in connection with annual renewals of the fidelity bond covering an employe, stated that the employe was not in default, etc., making such statements in good faith, without the knowledge of any defalcation, and without reason to believe that one existed, the employer was not precluded from recovering on the bond, though the employe had in fact been in default when the certificates were made; the statements meaning merely that there had been no discovery of any defalcation during the preceding year—196 S. W. (Mo.) 1148.

The SUPERINTENDENT

Helpful Hints for Practical Men Whose Problem is Maximum Production With Minimum Cost

Useful Cements for Clayworkers

For a good cement for steam joints use a mixture of 100 parts of fine iron filings, 2 parts of salammoniac, and 10 parts of water. This mixture soon rusts, becomes very strong, and resists the action of water and steam.

A fireproof cement may be made by mixing into a paste with vinegar 140 parts of iron filings, 20 parts hydraulic lime, 25 parts ground flint, and 3 parts of salammoniac. When the cement is perfectly solid the joint may be heated; this will cause it to set stone hard.

A handy solder for brass or bronze sieves or lawns used in the pottery and clay laboratories can be made by melting together 2 parts of tin and 1 part of lead, and casting into fine sticks. This alloy melts at about 300 deg. Fahr.

Cement for covering defects in the surface of glazed goods may be made by mixing a saturated solution of zinc chloride into a paste with dense zinc oxide. (The ordinary light oxide is useless.) This cement has an ivory color; if pure white is required, Keenea's or Parian cement should be used. If properly worked, the above compositions give a fairly glossy surface.

* * *

Data On Fuel Oil

The table below gives the specific gravity corresponding to each degree of Baumé Hydrometer, also the number of pounds contained in one United States gallon at 60 deg. Fahr.

MEMORANDA

One United States gallon of pure water = 231 cubic inches, contains 58,318 grains (or 3779.031 grammes) = 8.331 pounds avoirdupois.

One imperial gallon of pure water = 377.276 cubic inches, contains 70,000 grains (or 4536.029 grammes) = 10 pounds avoirdupois.

One cubic foot of pure water at 60 deg. Fahr. contains 1,000 ounces = 62.5 pounds avoirdupois.

To reduce imperial gallons to United States gallons, divide by 1.2.

To reduce United States gallons to imperial gallons, multiply by 1.2.

To reduce United States gallons to cubic feet, divide by 7.5.

To reduce cubic feet to United States gallons, multiply by 7.5.

To find the number of pounds avoirdupois in one cubic foot of any substance, multiply its specific gravity by 62.5.

To find the degree Baumé corresponding to any specific gravity:

$$\frac{140}{\text{sp. gr.}} - 130 = \text{B deg.}$$

To find the specific gravity corresponding to any degree Baumé:

$$\frac{140}{130 + \text{B deg.}} = \text{sp. gr.}$$

Baumé Deg.	Specific gravity. Deg.	In one gallon. Pounds.	Baumé Deg.	Specific gravity. Deg.	In one gallon. Pounds.	Baumé. Deg.	Specific gravity. Deg.	In one gallon. Pounds.
10	1.0000	8.33	32	0.8641	7.20	54	0.7608	6.34
11	0.9929	8.27	33	0.8588	7.15	55	0.7567	6.30
12	0.9859	8.21	34	0.8536	7.11	56	0.7526	6.27
13	0.9790	8.16	35	0.8484	7.07	57	0.7486	6.24
14	0.9722	8.10	36	0.8433	7.03	58	0.7446	6.20
15	0.9655	8.04	37	0.8383	6.98	59	0.7407	6.17
16	0.9589	7.99	38	0.8333	6.94	60	0.7368	6.14
17	0.9523	7.93	39	0.8284	6.90	61	0.7329	6.11
18	0.9459	7.88	40	0.8235	6.86	62	0.7290	6.07
19	0.9395	7.83	41	0.8187	6.82	63	0.7253	6.04
20	0.9333	7.78	42	0.8139	6.78	64	0.7216	6.01
21	0.9271	7.72	43	0.8092	6.74	65	0.7179	5.98
22	0.9210	7.67	44	0.8045	6.70	66	0.7142	5.95
23	0.9150	7.62	45	0.8000	6.66	67	0.7106	5.92
24	0.9090	7.57	46	0.7954	6.63	68	0.7070	5.89
25	0.9032	7.53	47	0.7909	6.59	69	0.7035	5.86
26	0.8974	7.48	48	0.7865	6.55	70	0.7000	5.83
27	0.8917	7.43	49	0.7821	6.52	75	0.6829	5.69
28	0.8860	7.38	50	0.7777	6.48	80	0.6666	5.55
29	0.8805	7.34	51	0.7734	6.44	85	0.6511	5.42
30	0.8750	7.29	52	0.7692	6.41	90	0.6363	5.30
31	0.8695	7.24	53	0.7650	6.37	95	0.6222	5.18

Best Composition for Silica Brick

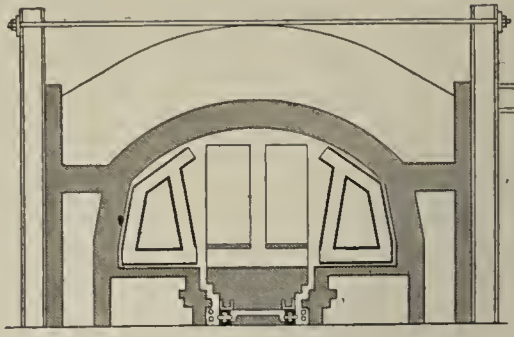
A special study of the factors determining the durability of silica brick, including the crushing strength after drying and burning, expansion, and fusing temperature, was made during 1916 and 1917 by M. Philippon who reported his findings to the French Academy of Science. Particular attention was given in his research to the nature of the quartz, the degree of fineness in the pulverizing process, the proportions of lime and slaking water taken, and the burning temperature.

The tests were made on different varieties of French quartz, Normandy quartzites and Pas-de-Calas sandstone. The ingredients were mixed with a little milk of lime for ten minutes in a grinding mill, the brick molded by hand.

(*Continued on page* 1154)

Come to Zanesville

June 25-28



THE KIL

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On the first two days—June 25 and 26—you will have a chance to see the DRESSLER TUNNEL KILNS in operation at the plants of American Encaustic Tiling Company, Mosaic Tile Company, and Roseville Pottery Company. You will be fully repaid for making the trip—you will get a wealth of information that you can turn to advantage in your own burning.

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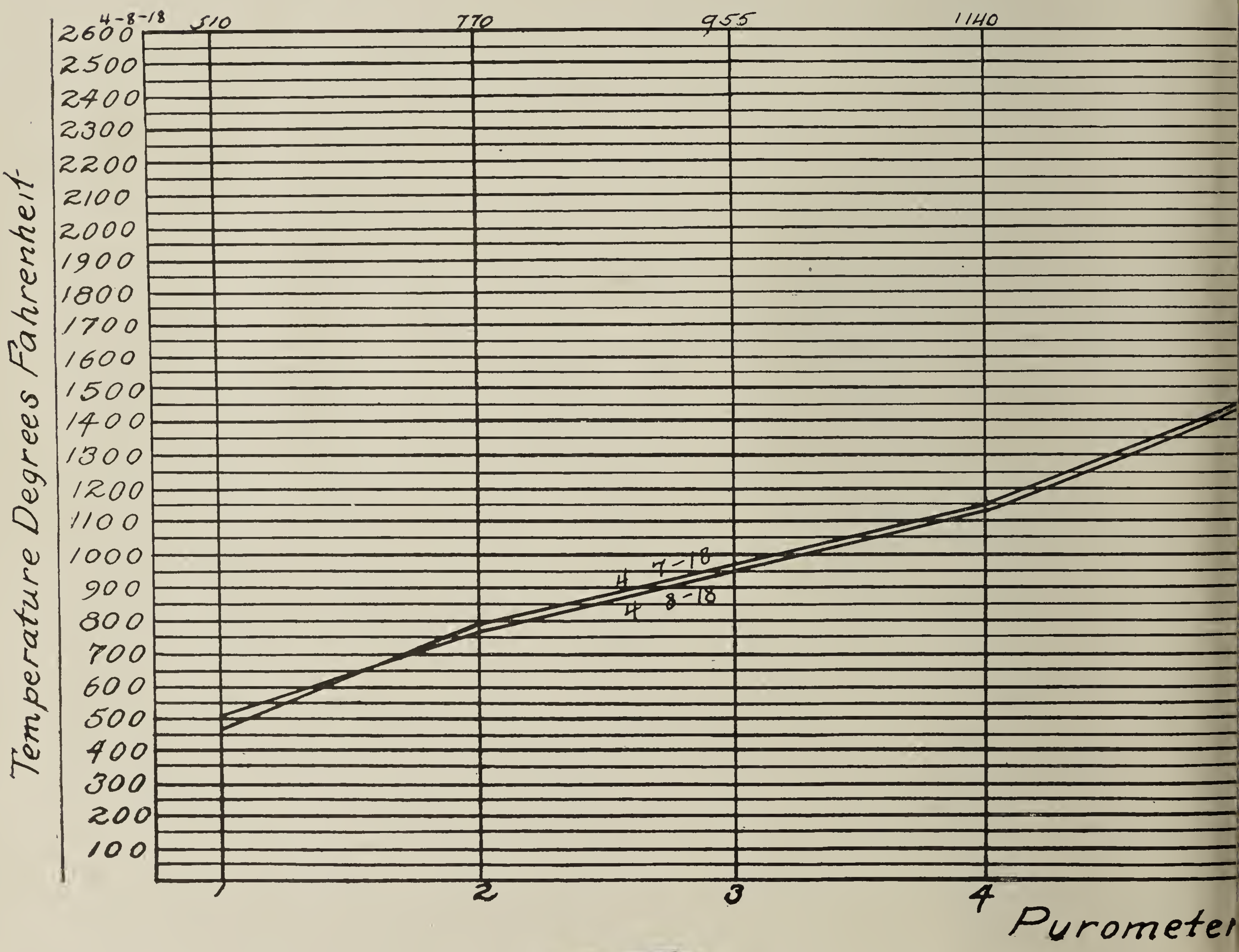

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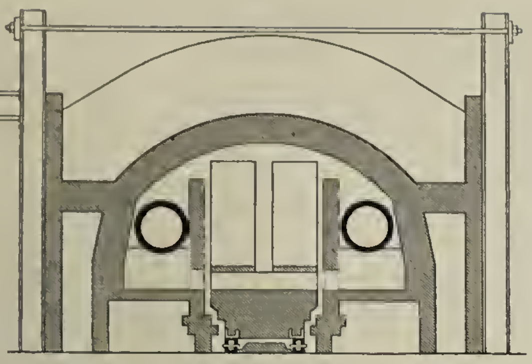

American Ceramic Society

Summer Meeting

You will see that ACCURACY is the cardinal principle of DRESSLER TUNNEL KILNS. See the curve below—it shows positive performance—straight as an arrow to the mark—no wavering as in Kilns of periodic fire boxes. This means correct firing and improved product, elimination of the waste of "Seconds"—the proper utilization of every pound of coal. The DRESSLER way is the right way.

UNNEL KILNS, Inc.

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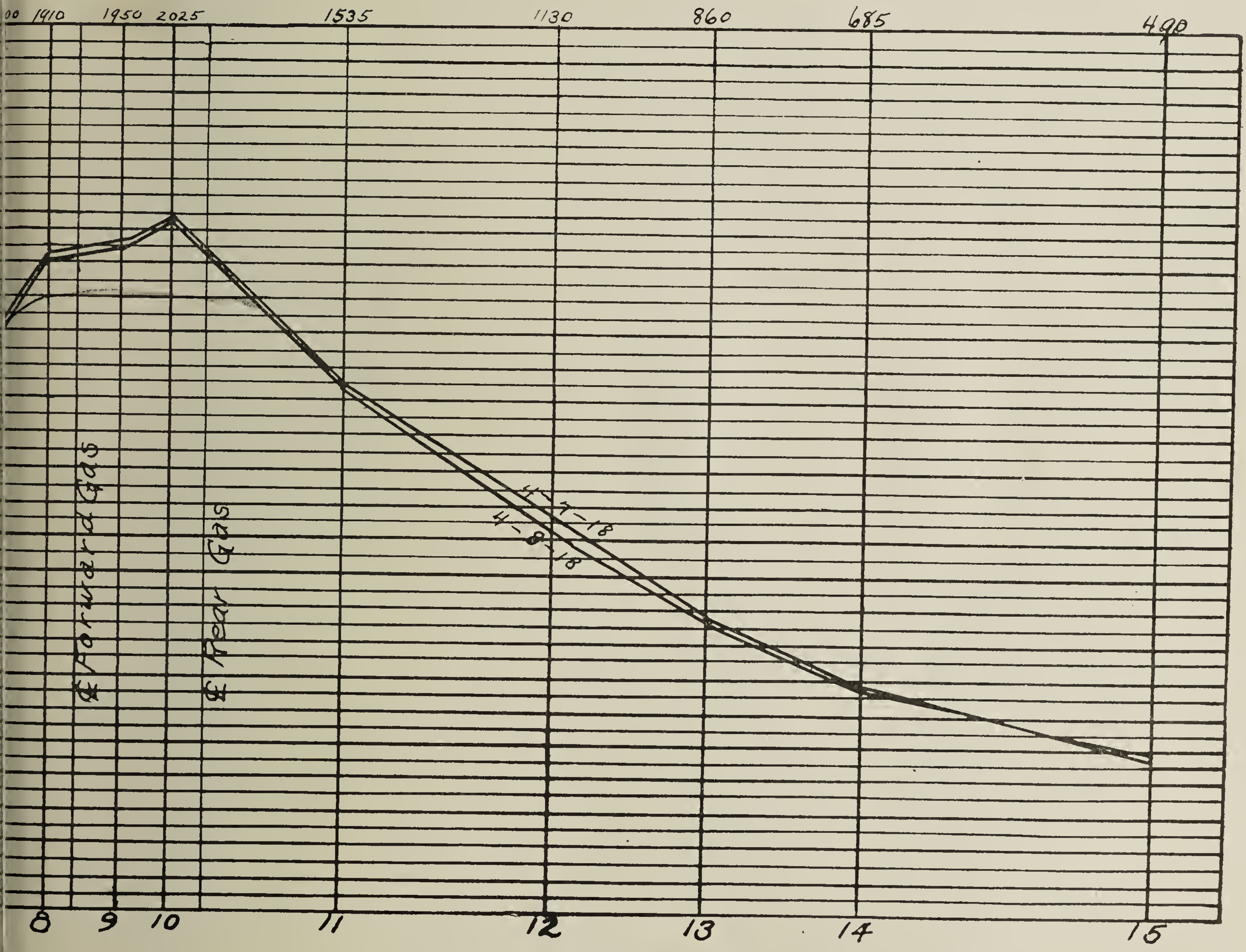

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For Mortar Cement and Brick
Brown, Black, Red and Buff Strongest and most durable
Manufactured by
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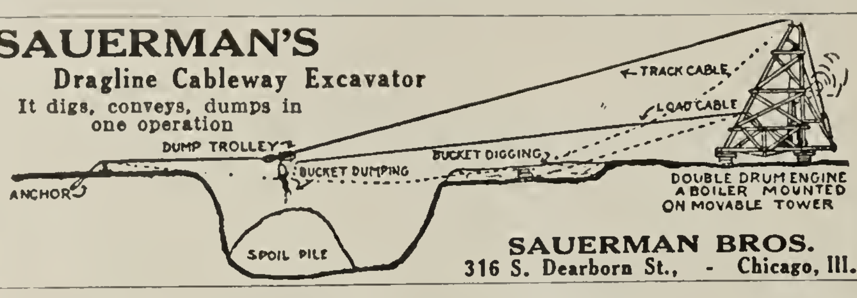

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It digs, conveys, dumps in one operation
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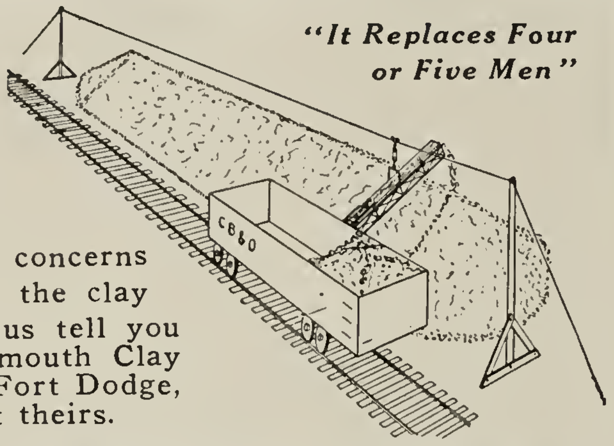

The B-G PORTABLE BELT CONVEYOR is being used with success by concerns well known in the clay industry. Let us tell you what The Plymouth Clay Products Co., Fort Dodge, Iowa, say about theirs.

"It Replaces Four or Five Men"

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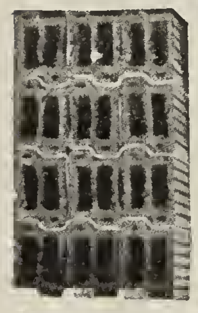

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A Better Hollow Block
It is being licensed to manufacturers in each shipping district in the U. S. A. and Canada. It is easy to make, lay and sell. Make arrangements for its manufacture and sale from your plant. Address
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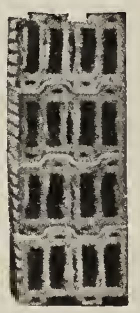

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HOTEL CHELSEA
West Twenty-third Street at Seventh Avenue,
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500 ROOMS EUROPEAN PLAN 400 BATHS
Room with adjoining bath, $1.00 and $1.50.
Room with private bath, $2.00.
Suites—parlor, bedroom and bath, $3.00 and upward.
Club Breakfast, 25c, up; Special Luncheon, 50c, up; Table d'Hote Dinner, 75c, up. Cafe attached.
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From Pennsylvania Station, Seventh Avenue car south to Twenty-third Street.
Grand Central, Fourth Avenue car south to Twenty-third Street.
Lackawanna, Erie, Reading, Baltimore & Ohio, Jersey Central and Lehigh Valley R. R. Stations, take Twenty-third street crosstown car east to Hotel Chelsea.
Principal Steamship Piers foot West Twenty-third Street, take Twenty-third Street crosstown car.
WRITE FOR COLORED MAP OF NEW YORK.

(Continued from page 1151)

dried on cast iron plates at about 100 deg. C. and burned at 1,300 deg. C. in a down-draft kiln.

The following conclusions were drawn from the results of the experiments made:

First, the crushing strength, after drying and burning, is proportional to the fineness of the quartz employed. For instance, brick made of impalpable powder, with an addition of two per cent. of lime stood pressures up to eighteen kilograms per sq. cm. (232 lbs. per sq. in.) after drying, and 320 kilograms (4,540 lbs.) after burning. Similar brick, but composed of grains which would pass thru a 100-mesh sieve, but were retained by a 120-mesh sieve (grain about 1/200 in. diameter), gave much lower results, viz. two kgs. (29 lbs. per sq. in.) after drying and only 16 kgs. (227 lbs. per sq. in.) after burning at 1,300 deg. C.

Second, different varieties of quartz were all equally capable of producing strong brick if finely pulverized. The lowest figure obtained for brick made with impalpable quartz was 200 kgs. per sq. cm. (2,840 lbs. per sq. in.)

Third, the expansion during burning is proportional to the size of the grains, and is practically nil in brick made with finely-powdered quartz.

Fourth, the crushing strength after drying and after burning is proportional to the quantity of water added to the batch.

STRENGTH VARIES WITH QUANTITY OF LIME

Fifth, other conditions being equal, the strength of the brick after drying varies in accordance with the quantity of lime added. The strength after burning is fairly constant for between one and two per cent. lime, beyond which limit it appears to decrease. In one of the quartz tests the lime produced the following effects on the crushing strength:

Amount of lime added to brick for bond	Crushing strength of burned brick kg. per sq. cm.	lbs. per sq. in.
none	110	1,560
1%	280	3,973
2%	300	4,257
2½%	260	3,689

Sixth, each unit of lime added to quartz lowers its fusion point by about 20 deg. C.

Lastly, the hardening of the brick under the action of heat was observed. The test pieces were made of impalpable powder, grains measuring about 0.13 mm. (1/200 in.) in diameter, and two per cent. of lime. In this experiment, the hardening of the impalpables began at 800 deg. C.; at 1,200 deg. C. the strength attained 190 kg. per kg. (2,696 lbs. per sq. in.) increasing to 270 kgs. (3,830 lbs.) at 1,300 deg. C.

The brick made of coarser grains, on the other hand, began to harden only at temperatures above 1,100 deg. C., and at 1,300 deg. C. they gave a strength of merely 70 kgs. (993 lbs.)

In a series of experiments made at a later date, with varying proportions of impalpable powder and different sizes of grains, the least fusible brick were found to be those containing the minimum amount of impalpable quartz. The maximum size of the coarse grains for a good brick appeared to be eight mm. (⅓ in.)

The results of these tests has led to a formula from which a good standard brick can be made. The ingredients used are quartz and large crystalline elements, quartzites, or sandstone, all containing at least ninety-six per cent. of silica. The size of the grains, and not the kind of quartz, is the factor affecting the strength of the brick. The proportion of

lime is reduced to only 0.6 per cent., that is to say two per cent. in terms of fine powder. The percentage proportions of the silica brick ingredients are thirty per cent. of impalpable powder, and seventy per cent. of grains between one mm. and eight mm. (1/25 in. and ⅓ in.) in diameter.

The brick are burned at 1,300 deg. C. in a tunnel kiln. The crushing strength is from 200 to 250 kgs. per sq. cm. (2,840-3,350 lbs. per sq. in.) and the average expansion in burning is 1.6 per cent. The absolute density is below 2.4 (apparent density, about 1.9), and the fusing point is about 1,780 deg. C.

Up to the present time, brick of this composition have lasted for upwards of 200 charges in the open-hearth steel furnace, and are expected to stand over 300 charges.

⁂

Thermal Values of Soft Coals

From selected free-burning and caking soft fuels. From U. S. Geological Survey Bulletin No. 232 and U. S. Bureau of Mines Bulletin No. 23.

State	No. Test	Kind of Fuel.	County	B. t. u. per lb.
Alabama	375	Soft—caking	Bibb	13,671
Alabama	484	Soft—free-burning	Jefferson	14,447
Arkansas	293	Soft—caking	Sebastian	13,705
Arkansas	308	Semi-anthrac.—caking	Johnson	14,125
Arkansas	340	Lignite	Ouachita	9,549
Georgia	481	Soft—free-burning	Chattanooga.	12,865
Illinois	448	Soft—free-burning	Williamson..	12,920
Illinois	511	Soft briquets	St. Clair	13,271
Illinois	509	Soft—caking	Saline	13,621
Indiana	428	Soft—free-burning	Green	13,099
Indiana	435	Soft—caking	Pike	13,545
Indiana	464	Soft briquets	Parke	11,930
Indian Territory	437	Soft—free-burning		13,932
Indian Territory	449	Semi-anthracite		14,682
Kansas	311	Soft—free-burning	Linn	12,343
Kentucky	434	Soft—free-burning	Union	14,026
Maryland	490	Soft—free-burning	Allegany	14,515
Maryland	518	Soft briquets	Allegany	14,717
Missouri	319	Soft—caking	Randolph	11,747
Montana	477	Lignite—free burning	Carbon	11,628
New Mexico	392	Soft—caking	Colfax	13,059
New Mexico	387	Soft—free-burning	Colfax	12,721
Ohio	483	Soft—free-burning	Belmont	13,381
Pennsylvania	473	Soft—caking	Indiana	14,240
Pennsylvania	499	Soft—free-burning	Cambria	14,119
Tennessee	409	Soft briquets	Westm'rel'nd	14,382
Pennsylvania	514	Soft briquets	Claiborne	14,092
Tennessee	368	Soft—free-burning	Campbell	14,008
Tennessee	363	Soft—caking	Grundy	13,257
Texas	291	Lignite—free-burning	Wood	11,131
Utah	404	Soft—free-burning	Summit	12,586
Virginia	482	Anthra.—free-burning	Montgomery	12,679
Virginia	507	Soft—caking	Tazewell	14,177
Washington	290	Sub-bit.—free-burning	King	11,77[illegible]
Washington	359	Soft—free-burning	Kittitas	12,9[illegible]6
West Virginia	305	Soft—free-burning	Marion	13,964
West Virginia	439	Soft—caking	Kanawha	13,995
Wyoming	399	Soft—free-burning	Carbon	12,222
Wyoming	400	Sub-bit.—free-burning	Uinta	12,488

These values give in B.t.u. the theoretical thermal value of soft coals as obtained at the St. Louis Testing Plant from 139 samples of coal, and were established by "actually burning one gram of the air-dried coal in oxygen in a Mahler-bomb calorimeter."

⁂

C. D. Gregg to Speed Up Ordnance Work

Cecil D. Gregg, president of the Evens & Howard Fire Brick Co., St. Louis, Mo., has been appointed head of the Department of Progress of the Ordnance Bureau and departed for Washington June 1 to assume his new duties. He will retain the presidency of the brick company and also his position as president of the Gregg Tea & Coffee Co.

Mr. Gregg's new duties, it is understood, will be similar to those of an efficiency expert, in that he will see to speeding up production of guns, and to maintaining the accelerated rate of manufacture.

It is the direct pulling strain that causes your belt joints to wear out and tear out.

CRESCENT
BELT FASTENERS

make a joint without direct pulling strain.
Ask our Service Department.

Crescent Belt Fastener Co.
381 Fourth Avenue, New York, N.Y.

Reduce the chances of
FIRE
PREVENT
Vandalism
By equipping your watchman and burners with a
HARDINGE Watch Clock

You will save in insurance more than the cost of the clock system—to say nothing of the increased efficiency of your night force.

Write for details
Hardinge Bros Co., Inc.
1760 Berteau Ave., Chicago, or
A. C. Rowe & Son, Inc.
33 Reade St., N. Y. City

Padded Gears
If You Use
Rino Gear Shield

the gears will be padded, they will run practically noiseless, quiet and without grit, which will practically eliminate wear and the cost of replacements and new gears. Rino Gear Shield sticks tight, doesn't drip off and saves in many ways. It replaces inefficient grease. Address,

The Ohio Filler and Shield Co.
Columbus - - - Ohio

Hill Friction Clutches
Collar Oiling Bearings
and
Complete Power Transmission Machinery Equipments

Hill Friction Clutch Pulley
Smith Type
(Patented)

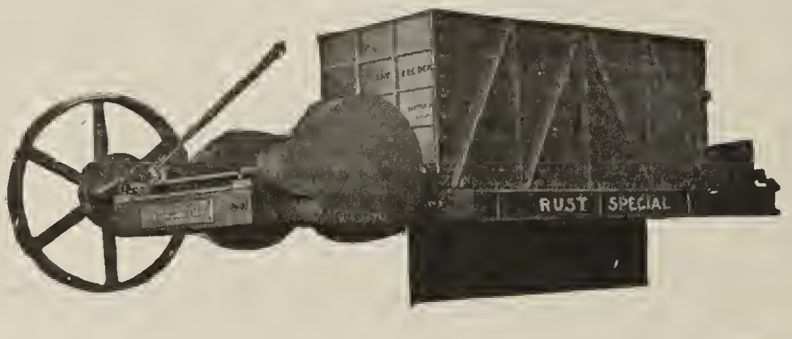
Catalogs upon Request
The Hill Clutch Co.
Cleveland, Ohio
New York Office. 50 Church Street

Who's Responsible
for that batch of work gone wrong? Put a
TRADE MARK
BRISTOL'S
REG. U. S. PAT. OFFICE.
Recording Pyrometer
on the job, and you won't have to ask that question. Instead you can say "Why did it happen?" You have the complete details before you in Bristol's Chart Records.
Write for bulletin AE-205
THE BRISTOL CO., Waterbury, Conn.

STEVENSON'S PANS AND SEWER PIPE PRESSES
are our leaders in a complete machinery line. Brick, tile and pipe plants furnished complete.
STEVENSON Peerless Machinery
The Stevenson Company
Wellsville Ohio

They Drill Big Blast Holes
at the plant of the Kansas Buff Brick & Manufacturing Co., Buffville, Kansas.
They say:
"It has cut the labor and fuel bill about 60%, and the powder bill about 50%. It paid for itself in the first three months; it saves enough powder each year to more than pay for its initial cost."
This is interesting because it is a fact.
Write for literature on Big Blast Hole Drilling
The Sanderson Cyclone Drill Co.
Orrville, Ohio

The "Rust Special" Clay Feeder
is a wonder for work and in scores of brick plants it has paid for itself the first year. It feeds the clay evenly, prevents clogging and insures a perfect mix. Send for literature and prices.
Marion Machine, Foundry & Supply Co.
Box 395, Marion, Indiana



QUESTIONS

A Two Cent Stamp May Bring
You Advice That Will Stop
a Waste, Improve Your Ware
or Lower Your Production Cost

Address all communications intended for this department to "Editor, Questions and Answers," care of "Brick and Clay Record," Chicago.

Using Wood in Burning

851. *Virginia—We are having a hard time getting a sufficient supply of coal, even after cutting down our production to fifty per cent., conforming to government regulations.*

Since we are permitted to make up to fifty per cent. total production, it has occurred to us that we might use wood to help out in burning. With this idea in mind we ask you to tell us of the comparison in results likely to be obtained, and also how many cords of wood it will probably be necessary to use in place of one ton of coal.

We are burning our ware in tight bottom down-draft kilns of the Dennis type.

There are several plants in particular localities using wood as a fuel because of the scarcity of coal and the abundance of wood, and good results in burning are obtained. Some plants use the wood during the water-smoking period and when this process has been completed they fire their furnaces with coal.

The number of cords of wood that will be necessary to take the place of one ton of coal varies with the type and calorific value of the coal and wood used, kind of furnace, draft conditions, etc. However, the following table shows the relative calorific value of different woods in terms of their equivalent in coal:

Wood.	Lbs. coal equivalent to one cord of wood.
Hickory, shell bark	1,910
Oak, white	1,670
Ash, white	1,440
Dogwood	1,550
Oak, black	1,390
Oak, red	1,390
Beech, white	1,380
Pine, yellow	1,060
Pine, pitch	812
Pine, white	800
Chestnut	1,000
Poplar	1,080

⁂

Cost Figures On Clay Products Manufacture

849. *New York—Can you put me in touch with some brick producer, or producers, who would be willing to give me detailed information as to labor costs in the production of brick and hollow ware by the wire-cut process?*

The above question was asked by a member of the New York State Geological Survey, who further states in his letter, "I have been interested in placing before the brick pro-

and ANSWERS

Best Authorities in Every Clay-working Branch are Called into Consultation — Their Advice is Free to You, Thru These Columns

Should a reply be desired by letter, send a stamped and addressed envelope with your question, and it will be answered promptly.

---

ducers of the state, and the Hudson Valley especially, any facts or figures which would be of assistance to them. I have recently been making some experiments which seems to show that it is possible to use the auger machine on the clays of this region. The majority of the producers of the Hudson Valley are many years behind in the use of brick machinery and have to be shown when anything new is suggested to them.

"I have first hand information as to their own labor costs and would like to present to them a statement as to costs in some of the modern plants of the region near Chicago especially as conditions of manufacture are somewhat similar in both regions."

The following are average costs for manufacturing building brick, hollow tile, and drain tile in Illinois and are based on paying ordinary labor $2.25 per ten-hour day and the coal is figured at $2.50 per ton, f. o. b. car for mine run. Any labor or coal costs that are to be used for comparison should be pro-rated in accordance with local basic costs.

We have omitted adding anything for losses purposely. Local conditions of plant, raw material and labor vary too much. An average percentage of loss would be too high. Two per cent. ought to cover everything, except hollow tile of odd shape.

Many men will consider the costs for making building brick which are given as being too high. We know that it is higher than those made in the Chicago district, but considering large and small plants, we believe it is a fair average. The large plants can reduce these costs in proportion all along the line, but the many dismantled small yards that sold brick for $10 for years and then went into the hands of a receiver are evidence that their costs were higher than they thought.

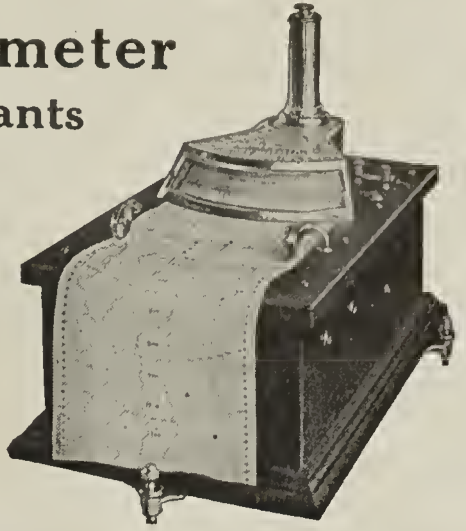
	Building Brick	Hollow Tile	Drain Tile
Labor-Power	.60	.20	.20
Labor Grinding	.30	.10	.10
Labor Making	.90	.40	.50
Labor Drying	.25	.10	.10
	Per M	Per Ton	Per Ton
Digging Clay-Labor	$ .60	$ .20	$ .20
Labor Setting	.60	.18	.22
Labor Burning	.60	.16	.18
Labor Drawing	.60	.16	.20
	$4.45	$1.50	$1.70
Coal for power and burning	2.50	1.25	1.43
	6.95	2.75	3.13
Overhead, including repairs	2.52	1.15	1.15
	$9.47	$3.90	4.28

Some plants which use surface clay entirely can omit the "grinding" item entirely.

⁂

Electric Motor Equipment for Brick Plant

844. *Pennsylvania—We desire to know which of the following forms of power would be best for running two nine-foot dry pans, two four-mold dry press machines, and one crusher.*



Price Pyrometer on Small Plants

It isn't necessary that you have a large number of kilns before our pyrometer is valuable. It saves tons of coal, labor and time on the two, three and four kiln plant.

The Price Electric Co.
12367 Euclid Ave.
CLEVELAND OHIO

APPRAISAL OR INVENTORY—WHICH?

Would you desire an easy adjustment, in case of fire? Appraisal of your plant by a reliable firm makes it possible. Here's the proof in a letter from the Shackelford Brick Company, Laurence E. Stone, Treasurer and Manager—

"You no doubt have been informed that our plant was destroyed by fire December 17, 1917, and we take this opportunity of expressing our appreciation of the appraisal rendered our company in November 1916, which proved very beneficial to us in the settlement of our fire insurance. We realize that we would not have been able to adjust this matter as readily or satisfactorily had we not been appraised."

Send us description of your plant, kilns, etc., and approximate value of buildings. We will forward literature and inform you what our charges for appraisal will be.

RAU APPRAISAL COMPANY, Inc.

Patton Bldg., Milwaukee, Wis.
Monadnock Block Chicago (Branch)

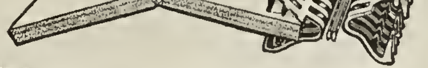
"Never Lets Go"

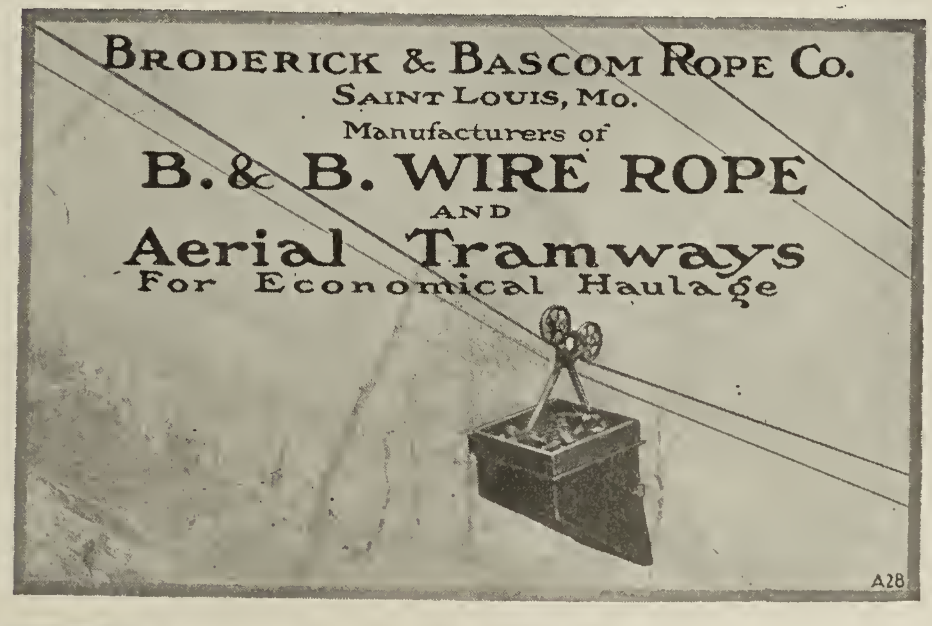
Alligator Steel Belt Lacing

is driven into the belt with a blow of the hammer, and its double grip (note the illustration) holds so firmly that it will not loosen during the life of the belt.

Properly applied it is the strongest fastener and can be used in all classes of service, light or heavy duty—any kind of belting. ***We have the proof.***

Flexible Steel Lacing Co.
522 South Clinton Street
CHICAGO, ILL.





BRODERICK & BASCOM ROPE CO.
SAINT LOUIS, MO.
Manufacturers of
B. & B. WIRE ROPE
AND
Aerial Tramways
For Economical Haulage

KEYSTONE

**Have you a shallow pit—
from one to six feet deep?
Do you strip your shale pit?**

The Keystone Excavator 10-Ton Traction

means a lot to the man who is operating under these conditions. Equipped with three different buckets, it is adaptable to a wonderful variety of work.

The flat bottom SKIMMER SCOOP (shown above) is designed expressly for shallow cutting. Mounted on a sixteen-foot boom, it has a horizontal crowding movement of eleven feet—hence can be used on cuts 6 inches in depth, loading 200 to 500 cubic yards per day and replacing 25 to 50 hand shovelers. Powerful and strong, it will dig shale or tough fire clay without blasting—anything but solid rock.

Operating in soft material, against a high bank, the half-yard DIPPER SCOOP is used.

For excavating below grade the DRAG DITCHING SCOOP is put on.

Its light weight (10 tons), long wheel base and large tread wheels make it an ideal traction, and its low cost makes it available to the plant of moderate capacity.

May we send catalog and list of Brick Makers who are using Keystone Excavators?

KEYSTONE DRILLER CO., Beaver Falls, Pa.
170 Broadway, New York City Joplin, Missouri
Monadnock Block, Chicago

STEAM SHOVELS

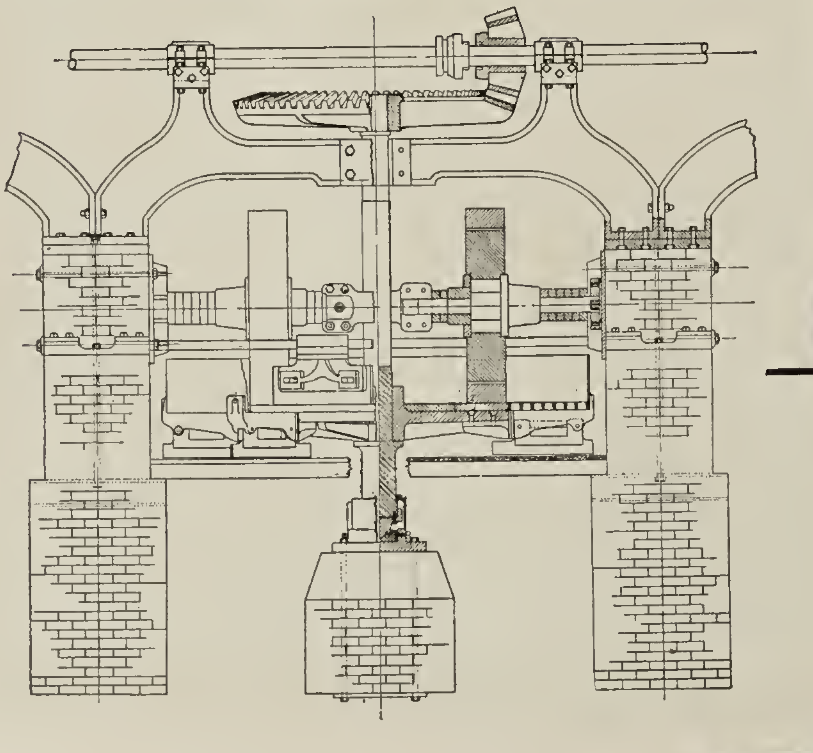
The "MEANS" 9 Ft. Dry Pan

is being chosen for the reduction of clay and shale by successful claymen because careful comparison with other makes, and records of their performance, show the "Means" to be the best.

Special features are the improved step and toe, and adjustable bearings.

In addition to dry pans we manufacture all equipment required in sewer pipe and tile plants, and our special goose-neck attachment for the sewer-pipe press affords a means of making brick directly from the press. Write us.

The Toronto Foundry & Machine Co., Inc.
Toronto, Ohio



A. Electric power generated by steam.
B. Electric power generated by gas engine.
C. Steam power with line shafts and belts.
D. Gas engine power with line shafts and belts.

We also wish to know what horse power motor it takes for each nine-foot dry pan, each dry press machine and crusher.

What would be the size, horse power and cost of boiler, engine and dynamo to create the electric power required?

What would be the size, horse power and cost of the gas engine required to furnish the necessary electric power?

What is the size, horse power, and cost of boiler, engine, line shaft and belts if this sort of power is used direct?

What is the size, horse power, and cost of the gas engine, line shaft and belts that would be needed should this form of power be used direct?

Furthermore, can brick be dried in the kiln without placing them in a dryer if enough extra kiln room is provided?

As a general answer to your questions marked A, B, C, and D, we will say that with electric drive the various departments of a plant can be located and arranged to the best advantage without the limitations imposed by a central engine drive with its accompanying belt connections to the various departments.

In a central engine drive all of the belting and shafting must be run even if it is desired to operate only one machine. In such cases the power lost in friction is enormous, and the wear on the belts, bearings and shafting is considerable.

With the individual motor drive, energy is used only where useful work is being done. The control of any one machine is right at hand, convenient to the operator, and the machine can be started and stopped at will. There is no cost for power after the machine is shut down, as would be the case were long lines of belting and shafting used. Also, due to the fact that the motors can be placed very close to the machine, the amount of belts, gears, shafts, and so on are reduced to a minimum. The belting is often a big source of trouble on clay plants, but this can be entirely eliminated if electric motors are used with chain drives which type of transmission is meeting with very good success on many plants.

In regard to your questions A and B, it depends entirely upon the availability and cost of gas and fuel in your district, as to which source of power will be better and cheaper for you. You can best determine this by inquiring among manufacturersr in your own district.

Depending more or less upon the capacity you desire and the hardness of the material to be ground, a nine foot dry pan will require a 35 to 50 horse power electric motor. A dry press machine will require from 35 to 50 horse power motor and a jaw crusher requires about a 35 to 50 horse power motor.

You will probably require a power plant consisting of about two 150 horse power boilers and an engine of about 250 horse power to supply the power requirements for the above machine together with the power for the pugmill, fans, etc. A power plant equipped to supply this amount of power would cost anywhere from $30,000 to $45,000 and more, depending upon the kind of equipment you use.

The first cost of the electric power set would be more than that of a power plant where line shafts and belting were used but would be cheaper in the end. We would certainly recommend this type of installation. Rather than build a power plant it might be cheaper or advisable to buy your power from some central power station. Quite a few brick plants are doing this now and find it very satisfactory and economical.

In regard to your last question, dry press brick are placed directly in the kiln after coming from the press in a good number of plants, and the plan works very well. However, this cannot be done successfully where soft mud or stiff mud brick are manufactured. Where the dry press brick are set directly in the kiln they generally water smoke two days longer than would ordinarily be required were the brick dry previously to being set.

* * *

IN *the* WAKE *of the* NEWS

Being Brief Mention of a Host of Interesting Happenings in the Varied Fields of Clayworking

Personal

Aaron M. Weil, president of the Crown Pottery Co., at Evansville, Ind., has returned from a business trip to New York and points in the East.

J. R. Conant, who for several years has been manager of the Rockport (Ind.) Tile Co., has moved with his family to Springfield, Ill., where they will reside in the future.

John Andres, secretary-treasurer of the Standard Brick Manufacturing Co., Evansville, Ind., has been elected president of the Rotary Club of that city for the ensuing year.

W. S. Russell, manager of the Dickinson (N. Dak.) Fire & Pressed Brick Co., has announced his candidacy for the nomination for county surveyor. Mr. Russell worked in this profession at Grand Forks and Devils Lake for twenty years and is qualified for the duties of the office.

J. H. Bell, of the Louisville (Ky.) Fire Brick Works is expected back shortly from Washington, where he has been for some time in connection with Government orders, which represent about eighty per cent. of the company's present capacity production at both plants.

R. L. Queisser, Jr., formerly of the R. L. Queisser Co., Cleveland, Ohio, is now a first lieutenant in the signal corps, U. S. R. Word received said he has just graduated from the special course at Boston Tech, and will take up his duties as airplane engineer in Texas, to which point he has just been ordered.

William H. Gatewood, a pioneer brick manufacturer of Omaha, Neb., died at the home of his daughter, Mrs. Richard Hoye, 3042 Spring Street, Omaha, on May 27. He was past eighty years of age and had been a resident of Omaha more than sixty years. About twelve years ago he retired from active work.

Robert L. Hare has been placed in charge of the research department of the A. P. Green Fire Brick Co., Mexico, Mo., and has taken up his work in the molding room. Mr. Hare is a ceramic graduate and has had several years of practical experience in the operation of clay plants, having been in charge of the Fulton (Mo.) Brick Co. for two or three years.

Tycos
Reg. U.S. Pat. Off.
Rochester, N.Y.

Tycos CATALOGS
contain full description of
Tycos Temperature Instruments
Indicating, Controlling, Recording

SEND FOR THEM, MENTIONING
TYPE YOU ARE INTERESTED IN

Taylor Instrument Companies
ROCHESTER N.Y.
There's a *Tycos* Thermometer for Every Purpose

save
that 25 cents
and make it work for
you and Uncle Sam
It will buy
W. S. S.
WAR SAVINGS STAMPS
Issued by the U.S. Government
At any Post office, bank or authorized business house

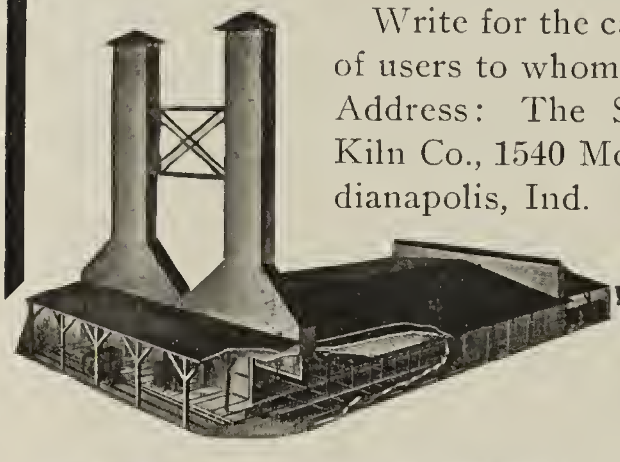
Why You Now Need The Standard Drier

Because The Standard Drier Heating System is so **flexible of arrangement** that it can be exactly fitted to the requirements of your clay and your steam conditions.

Because The Standard is the "War-Time Economy Drier." Only **one** man is needed to operate it.

Because it is so thoroughly high-grade in materials and construction that it goes for years without requiring any repairs of any consequence.

Write for the catalog and list of users to whom we refer you. Address: The Standard Dry Kiln Co., 1540 McCarty St., Indianapolis, Ind.



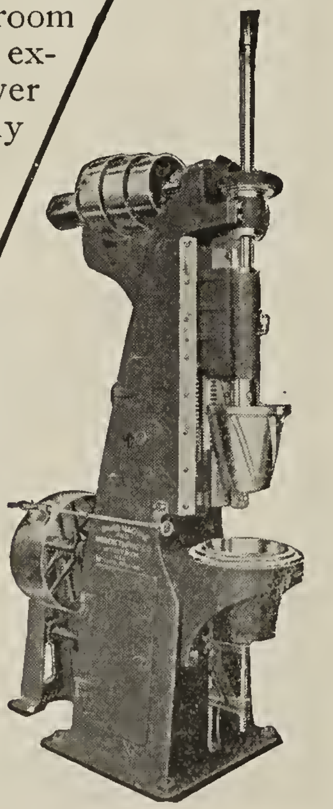
A bi-product that is profitable

Place the machine off in one corner of your plant, and let it absorb the spare time of your machine room men. They soon become expert, and a stock of flower pots quickly collects, ready for the kiln.

It is almost pure velvet—a bi-product—a sure seller with a manufacturing cost low enough to insure a goodly profit.

Send us sample of your clay and let us show you what our flower pot machine will do.

Baird Machine & Mfg. Co.
54-56 Jefferson Ave.
Detroit, Mich.



H. O. Garrison, assistant general manager of the Thornton Fire Brick Co., Clarksburg, W. Va., who has been associated with that company for the past five years, has enlisted in the United States Navy and was ordered to report for duty at Washington, D. C., on June 6. Mr. Garrison qualified as a musician, first class, and has been assigned to the Navy band now stationed at Navy Yards, Washington, D. C.

Matthew Ludwig, age 56, died at his home in Leavenworth, Kan., on May 22. He was born at East St. Louis, Ill., and came to Leavenworth in 1881, where he has been engaged in the brick business ever since. Mr. Ludwig, in his position with the government as brick foreman at the new federal prison, made the first brick put into its construction in 1899. Later he was transferred to the U. S. D. B. prison at Fort Leavenworth and was foreman at the brick plant there up to the time of his last illness which caused his death.

Alabama

A large number of brick manufacturing plants in the Birmingham district and in other sections of Alabama have resumed operations and are turning out large numbers of brick. The brick plants were placed on the non-essential list by the government but the heavy demand for brick caused by the government work, including the nitrate plant at Sheffield, the shipyards at Mobile, and big developments by corporations working on war contracts, has necessitated a heavy supply of brick. These are being manufactured as rapidly as possible.

California

Plans are being prepared for the Orland (Cal.) Union Grammar School to cost $14,000. The plans will call for hollow tile construction and terra cotta tile roofing.

Another important school building will be erected at Rio Vista, Cal. Plans are being drawn for a red rug brick building and clay tile roof to cost $40,000.

The State of California is figuring on plans for a pathological laboratory for the State Hospital at Napa, to cost $85,000. The building will be of hollow tile and frame construction.

Bids have just been opened at Sacramento, Cal., for the erection of a brick bakery and laundry building at the State Home in Sonoma. A number of contractors bid on the job which was awarded to L. Cereghino for $28,845. It is estimated that nearly $10,000 worth of brick will be used in the building.

One of the important building jobs now going on in San Francisco, Cal., is the five story addition to the Mills Building, which will make it the largest office building in San Francisco. The terra cotta contract on the building was awarded to the Livermore (Cal.) Fire Brick Co., and the brick contract was scattered.

A demand for brick is developed every week in some of the factory expansions in connection with Government work in relation to the war. The latest of this kind of work is the enlargement of the Hercules powder factory at Hercules. For improvements there, not only a large quantity of building brick will be used, but bids are also being called for furnishing a large amount of hollow tile.

The Stockton (Cal.) Fire & Enamel Brick Co. has contracts to supply fire brick for the boilers of about forty of the vessels of the Emergency Fleet building on this Coast,

and expects to have more contracts of this kind as the vessels approach the period of launching. The Los Angeles Pressed Brick Co. has also been successful in landing orders for some of the ships, and is said to be speeding up on its production so as to be able to meet the demand made upon it.

J. T. Roberts, president of the Stockton (Cal.) Fire & Enamel Brick Co., is very proud of the way his men contributed to the recent Red Cross drive and also on account of their subscriptions to the Third Liberty Loan. Every employe of the company subscribed to both. For the Red Cross every man gave a day's wages and the average subscription for the bonds was $90. When it is realized that fully 75 per cent. of the employes are foreign born, the record becomes the more remarkable.

The Parker Brick Co., at Santa Barbara, Cal., is one of the growing brick concerns of the state, which is making an impression in the territory about Santa Barabara, altho in existence only three years. The plant has a capacity of 25,000 brick a day, and it is reported that the contents of its first two kilns burned this year, about 750,000 brick, were sold before they were completed. It is understood that a large percentage of the output this year will find its way into the improvements of the Lolita Armour estate in Montecito, which are now under way.

With the output for the year cut in half, the building brick manufacturers of California are making a survey of their prospective business for this year's output. On the basis of a normal output and restricted building plans it looked as if the manufacturers would come to the end of the year with a large surplus stock on hand. Now, however, with the output so radically cut they are wondering if there will be enough brick made to take care of the current needs, curtailed as they are. The more optimistic believe that output and surplus stock on hand will just about balance the demand, and that next year they will start in business with a clean slate. Others, not so optimistic, on the other hand, contend that there will be a scarcity of brick before next year's brick can reach the market and the result will be that builders will turn to other material, such as concrete, which can be obtained in limitless quantity. Such a condition might work a hardship for a time on the brick men, but mankind has been using brick too long to turn permanently from it because a supply is not available for a few months.

The question of economy of operation is a matter that is occupying the attention of the California brick manufacturers. The Peterson-Kartschoke Brick Co., San Jose, and the McNear Brick Co., San Francisco, have installed electric elevator trucks in their plants, and while the latter has not prepared its roadways for the most effective use of this truck, at the former plant two are in constant use. George Chambers of the former company says that he is getting excellent results with this truck, especially in handling tile. W. W. Dennis, manager of the McNear Brick Co., says that his company bought the trucks in anticipation that the war needs would take some of its skilled workmen, most of whom are of the draft age. Until the company loses these men it probably will not go to the expense of improving its roadways for the best use of the trucks, especially in view of the short work year. The Stockton (Cal.) Fire & Enamel Brick Co. has given the truck much study and probably would have installed at least one this year, if war conditions did not make it advisable to go slow with expensive improvements. Other brickmakers located about the Bay region

"The Chain of Double Life"

There's no Mystery---

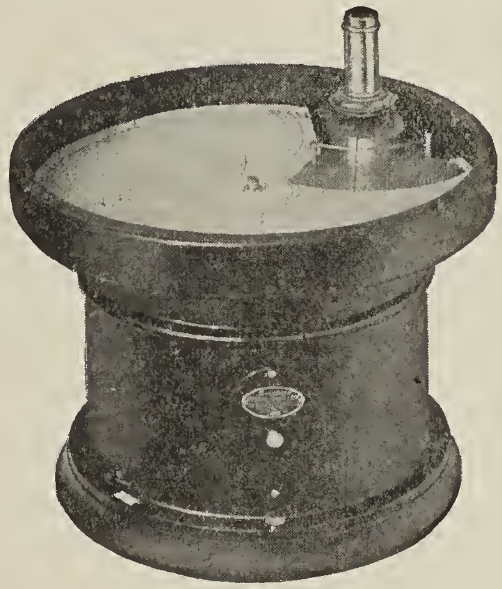
connected with the wonderful durability of

UNION STEEL CHAINS

It's All in the Large Case Hardened Bearings

They're harder than Hindenburg's heart —and that's harder than any grit in your plant.

THE UNION CHAIN & MFG. CO.
Seville, Ohio



A Patriotic Necessity That Is Profitable To You

When you install Beighlee's Pyrometer, you are serving the nation by conserving the coal or fuel supply. In addition you profit yourself by virtue of the smaller amount of fuel needed, and by virtue of the greater quantity of better ware produced. Beighlee Pyrometers do not get out of order easily, they are sturdy yet very accurate—and they always save for their owners.

The Beighlee Electric Co., Cleveland, O.

Coal Costs Lowered 10%

GUARANTEED

—if you will install under your boilers

Cyclone Boiler Grates

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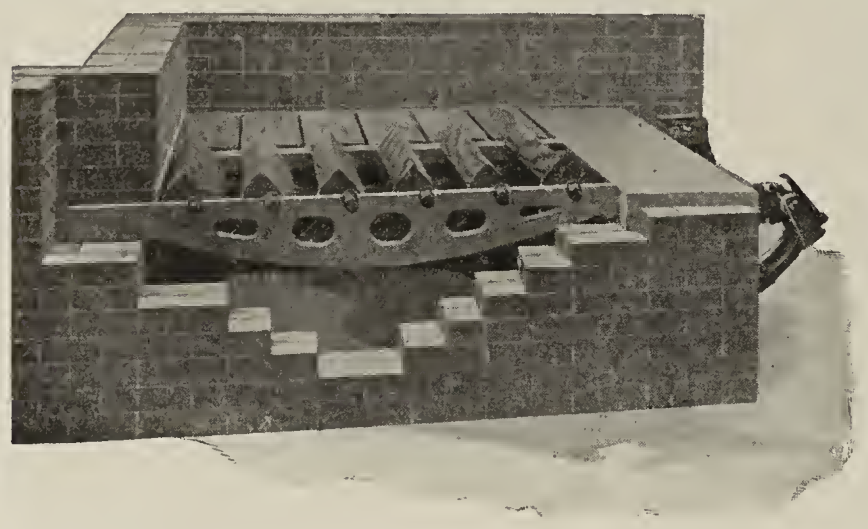

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have improvements of a labor-saving kind in contemplation for installation after the war.

Connecticut

A motion for a more specific statement in the action brought by John Mullaly who is seeking the appointment of a receiver for the Aetna Brick Co. of Berlin, Conn., was heard in the superior court at Hartford on May 24. Mr. Mullaly, who is the owner of 200 shares of Aetna stock, claims that while the net assets of the company have increased from $25,000 in 1910 to $74,000 he has received no dividends. He alleges that the directors have exceeded their powers in not declaring dividends. R. O. Clark is president of the Aetna Brick Co. and, according to the complainant, of three other brick companies which have interlocking directorates.

Delaware

The housing situation has become so acute in Wilmington, Del., notwithstanding the fact that contracts are about to be let for the construction of about 1,000 dwellings and apartment buildings, in addition to 100 homes which the DuPont Powder Co. is building for department heads, that a movement has been started by Emil Ulrich, connected with the street and sewer department, looking toward providing tents as temporary pleasant-weather domiciles for families who cannot be otherwise accommodated.

Florida

Information was given out by Chairman Ed Scott of the Florida State Road Department, who received a letter from W. F. Cocks, state highway commissioner, to the effect that an order has been placed for 1,000,000 brick for the road to Dorr Field and the brick will be shipped from the kilns in Robbins, Tenn., as fast as cars can be had for their transportation. The work of laying the brick on the road will begin as soon as they arrive. A force of convicts is at work on the road, grading it and getting it in shape for the brick laying. The road is in bad shape as the heavy trucks used by the government employes have cut it all to pieces.

Illinois

Commissioner Anderson, of Bloomington, Ill., has announced that there is a shortage of clay brick and that several jobs were remaining undone due to the lack of material in that city.

A verdict for $1,700 damages in favor of the Decatur Brick Manufacturing Co. in its suit against the city of Springfield, Ill., was returned by a jury in the Circuit Court on June 5. A stream of water used by the brick company has been polluted by water discharged thru the Bunn Park sewer, the plaintiff alleged.

The Calumet plant of the Chicago (Ill.) Brick Co., 138th and Stony Island Avenue, has been purchased by Richard Fitzgerald, president of the Chicago Junction Railway from the estate of P. J. Sexton, the stated price being $156,022. The land comprises eighty-five acres. The new owner will continue to operate the brickyard.

Indiana

The Adams Clay Products Co. of Martinsville, Ind., which has been closed down since last November, is planning to resume operations shortly, with L. M. Johnson in charge.

Brick and pottery manufacturers in southern Indiana towns are "taking time by the forelock" and are laying in their winter's supply of coal. In Evansville alone 22,000 fuel cards were filled out where the number of homes in the city is only about 17,000. Brick manufacturers were among the first to respond to the call of the fuel administration to fill in these cards. Coal mines in that section are being operated on an average of five days a week and indications are now that there will be no coal shortage in the southern Indiana territory during the coming winter.

As a rule brick and tile yards in southern Indiana are being operated on short time and some of the plants are closed down. Building operations in the city of Evansville for the month of May amounted to about one-third what they were during the corresponding month of last year. It is not believed there will be any improvement during the entire year. Brick manufacturers say that they are prepared to "help win the war" and that they expect to make further sacrifices. In view of the fact that many of the brick factories are closed down or are being operated on short time, the labor shortage problem is not as serious now as was feared a few months ago it would be.

Iowa

A good example of the value of brick as a building material is shown in the dismantling of the Shackleford Brick Co.'s plant at Des Moines, Iowa. The kilns are now being razed and the brick in the kilns were sold for nine dollars per thousand. From this must be deducted two dollars per thousand for cleaning. When the plant was built fifteen years ago the Shackleford company was selling brick for six dollars a thousand so that after fifteen years of service in the kilns it is bringing a net profit in sales of one dollar per thousand.

D. F. Morey of the Morey Clay Products Co. is one Iowa clay producer who is not greatly worried over the freight rate increase, particularly in its relation to the increase on coal prices. Mr. Morey was in Des Moines recently and stated that the freight rate increase is going to be a boom for southeastern Iowa plants in their competition with the other plants of the state. Mr. Morey's plant at Ottumwa has practically unlimited coal facilities within 1,000 feet of the plant. "The southeastern Iowa plants have had to take a back seat for years but from now on look out for them," is Mr. Morey's way of expressing the matter.

Kentucky

One of the first sectional meetings of the Kentucky Brick Men's Association, outside of the Louisville section which has been meeting weekly, was held recently at Lexington, Ky., Harry Cramer, chairman of the Lexington division calling the meeting. A number of Central Kentucky brick men were present, and some interesting discussions were heard.

James T. Howington, manager of the Coral Ridge Clay Products Co., Louisville, Ky., who recently returned from a trip to Washington in connection with Government orders, reports that the labor situation is bad and the freight increase rather alarming. At the present time his plant is very busy on Government orders for hollow building tile, but general business has been slowing down considerably.

An unusual feature recently noted in Louisville was in con-

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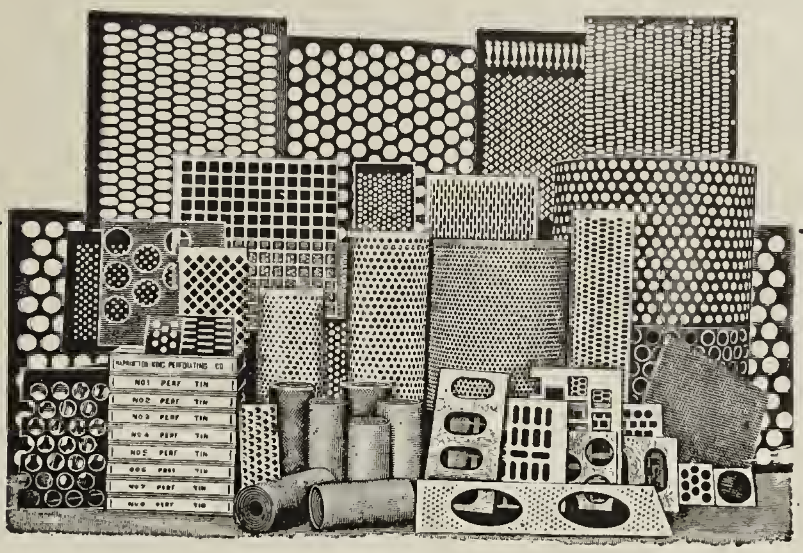

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You can safely guarantee that your brick will be

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You can get a higher price and influence architects to specify your product because Efflorescence is prevented absolutely.

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IMPROVE YOUR WARE

It can be done by the use of Rollin's Barium Carbonate because it eliminates scum.

Just add it to your clay at the pug mill or dry pan and it will make the scum-producing salts insoluble and harmless to your ware.

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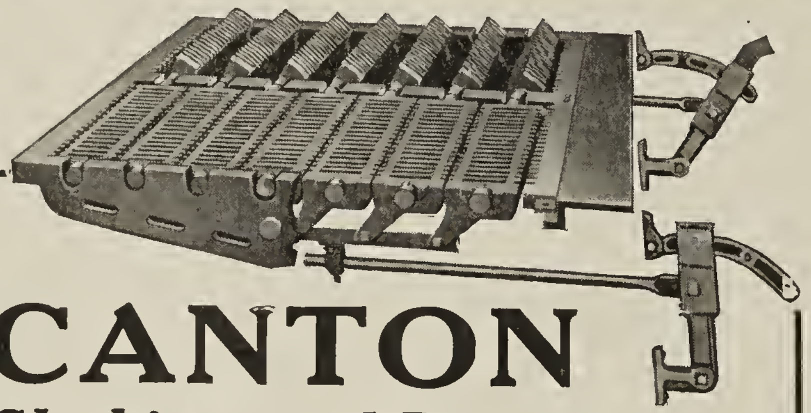

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GRATES

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The Canton Grate has satisfied its owners long before many other grates were thought of, and today hundreds of Brick plants are using it and saving money.

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THE CANTON GRATE CO.
1706 Woodland Ave., CANTON, OHIO

Southern Representative: McBurney & Jones, Efficency Engineers, 829 Trust Co. of Ga. Bldg., Atlanta, Ga.

nection with prices quoted when contracts were opened for necessary street work costing about $100,000. In these bids it was discovered that asphalt paving was quoted at considerably under vitrified brick or granite, whereas in past years asphalt has been quoted at a much higher figure. This is in part due to the fact that the asphalt companies need business badly and are willing to take it cheap to get it.

Indications are that Louisville brick manufacturers will have trouble this season in securing supplies of the better grades of Eastern Kentucky coal, as much of this coal has been sold to the gas and coal by-products plants, while a large percentage is being moved into other districts, forcing the brick trade to depend largely on lower grades of Western Kentucky, which sell for considerably less, but do not have the heating power.

The fact that Government orders feature a large percentage of the total business done by industrial concerns at the present time, has about decided the Louisville (Ky.) Board of Trade and Louisville Industrial Association to go ahead with plans to establish a permanent war order bureau in Washington. It is planned to have a competent man in charge of the bureau, and for the local shippers to keep him posted relative to their ability to take certain orders.

Some good brick orders are expected to develop shortly at both Paducah and Russell, Ky., where the railroads are planning some big roundhouse and shop improvements. At Russell the C. & O. railroad of Richmond, Va., will spend a portion of a $20,000,000 improvement allotment, ratified by the Government, on erecting a thirty-five stall roundhouse. The company had a number of locomotives frozen up there last season, and expects to put in a good plant. At Paducah the Illinois Central R. R. has let a contract to Joseph Nelson & Co., of Chicago, for a new roundhouse to cost close to a quarter of a million dollars, and is also planning to erect a railroad hospital.

The Louisville brick manufacturers and jobbers have gotten together and boosted prices again on both common and face brick. Common brick which were selling at $13 at cars, are now selling at $15 per thousand, or $17.50 delivered on job. Face brick which were sold at $21 cars, $25 delivered, are now quoted at $25 cars and $30 delivered. This increase has been made necessary by the rapid increase in the cost of labor, coal and supplies. Louisville dealers during the past year have been working together and advancing prices when necessary, with the result that all of the local houses have been making a little money.

Government orders for hollow tile to be shipped principally to Charleston, S. C., have kept the plant of the P. Bannon Pipe Co., Louisville, Ky., fairly busy but this business has been small as compared with the big contract for sewer pipe to be used at Nashville, Tenn., on the new Government powder plant. The Bannon company has been shipping some time on a contract at that point, which calls for about 350 cars of pipe in all. A. P. McDonald, sales manager for the company, reports that the Government demand for improvements at Jeffersonville, Ind., is about over with. The commercial demand has been light as a whole, with most of the present work for the Government.

A number of prominent industrial concerns of Louisville, Ky., representing members of the Board of Trade, have launched a campaign thru the Louisville newspapers, using the slogan "Stick to Your Job in Louisville," in an effort to show labor that wages are as high in Louisville as elsewhere; that there is nothing in changing jobs, and that as a patriotic duty to the city and the country men should stick, and aid in holding up production. During the past few weeks labor has been jumping from plant to plant and many manufacturers have almost new forces from month to month. The brick men have been more fortunate than others, but the situation is steadily growing more serious. Full page advertisements and reading notices are being used in the newspapers in an effort to educate employes.

At Maysville, Ky., the Chamber of Commerce recently came out strongly in favor of brick paving, claiming that it was far more handsome and durable, this contention being made when it was learned that the C. & O. railroad was planning to pave space around its new depot in macadam. The Chamber of Commerce at once wired to the railroad's main office, protesting against the use of macadam and asking for vitrified brick. The railroad replied that it was sending one of its engineers to Maysville to investigate the matter, and had ordered the macadam work stopped. The city offered to do her part in seeing that it cost the railroad no more to pave in brick than macadam, and the Mayor and several large individuals sent special wires, with the result that brick will be used, the city claiming that it will be far more in harmony with the handsome depot recently completed.

Kentucky brick men are much interested in the outcome of the proposed twenty-five per cent. increase in freight rates, which is considered one of the most serious blows that can befall general business concerns at this time. A conference was held in Louisville on June 1, between general shipping interests of the state and the Kentucky State Railroad Commission. Chairman Laurence Finn of the Commission appointed a committee composed of J. Van Norman, prominent attorney representing lumber, coal and other interests; C. B. Stafford, of the Louisville Board of Trade, representing Louisville shippers; and R. R. May, of the Southern Hardwood Traffic Association, as a committee to file protest. A wire of protest including resolutions asking that the increase be postponed until October 1, or until shippers could be heard relative to the justness of the increase, was addressed to Director General McAdoo. It was also asked that any increases be figured separately, and placed on the freight bills as a lump sum, instead of figured as a part of the quoted rate. At this meeting the theory was freely advanced that a twenty-five per cent. increase was not necessary for general operating expenses and extension of railroads, as it would amount to approximately one billion dollars a year, or five per cent. interest on $20,000,000,000, which is $3,000,000,000 more than the outstanding bonds and stocks of all American railroads.

The Council of National Defense recently reported that ten mayors of larger cities in Kentucky, including Lexington, Covington, Newport, Owensboro, Frankfort, Hopkinsville, Danville, Elizabethtown, Paducah and Henderson, had complied with a request that they hold down city and other building and discourage new enterprises, building and construction work, which are not essential to the war, and which may involve the use of labor, capital and material. Mayor Smith, of Louisville, had already taken such a stand at the suggestion of the council. This request was the outgrowth of a resolution adopted by the War Industries Board in Washington, pointing out the necessity for a policy of conservation in labor, material and capital, in order that these may be available for Government enterprises immediately

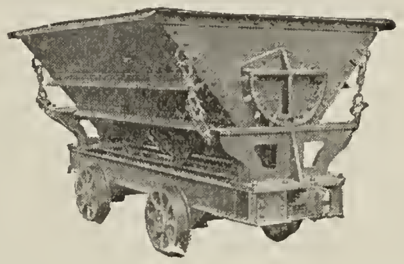
How Much Power

is required to pull your clay cars out of the pit up the incline?

Did you ever stop to figure that there's a big difference in cars?

Some cars are heavy and hard to pull—but

Watt Cars



are sturdy and light-running. They are made to carry big, heavy loads — yet they are not a drag on your power hoist.

Ask the Clay Plant Men Who Use Them

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The Watt Mining Car Wheel Company
Barnesville - - - Ohio

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When Coal is Hard to Get—
When Clay Brick are Hard to Make—
When Orders are Good—

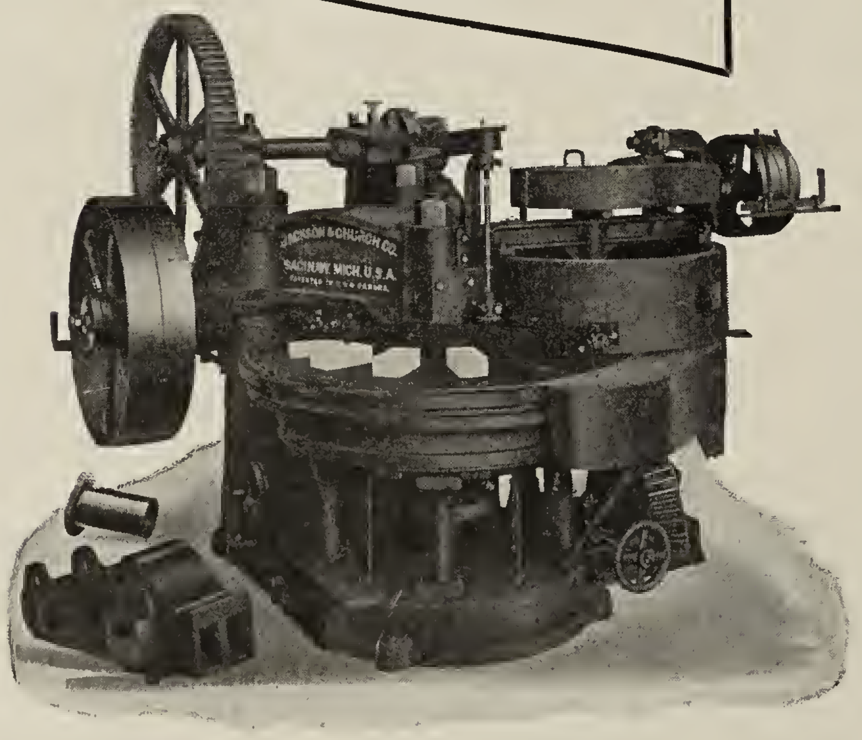
Make, SAND LIME Brick

The method is simple, the machinery requirements are not complex, the materials used are sand and lime. No coal is required except to make steam, the labor requirements are exceedingly low.......... The cost per thousand is small, the price of selling is good, and the demand will be enormous.

WHITE BRICK will have the call for interior factory, basement, and skyscraper court use—in addition to the usual building uses.

Tell us you are interested, we will gladly explain in detail.

Jackson & Church Co.
Saginaw, Michigan



The "Saginaw" Rotary Table Brick Press

connected with the war. The council has asked that this policy be adopted, not only in the matter of municipal improvements and extensions, but that it also be adopted by the city in the matter of permits for construction work, sought by private enterprises which involve the use of labor, material and capital, which are not connected with the prosecution of the war. This movement has probably already had some effect on building. The idea has spread everywhere that necessary work only will be permitted, and it has interfered with residence work as well as plant enlargement. In Louisville about the only work in hand consists of small residence work, and extension to plants working on materials needed for furthering the war work

Maine

The Horace Purinton Co., of Waterville, Me., got an early start at its brick yard this year, firing the first kiln on May 23. This, Mr. Purinton said, was the earliest that he had started operations in fifteen years. The first kiln contained 200,000 brick and the crew at the plant are molding an average of 35,000 a day on pleasant days.

Massachusetts

The Springfield (Mass.) Brick Co. sold its land, consisting of ninety acres off of Dickson Street, to Alice Mayo Fisk, Ada Mayo Sutton and Emily Mayo Schell, of New York, for $9,900. The purchasers have given the company a lease on the land until 1928.

Missouri

The Gasconade Clay Products Co., St. Louis, Mo., has been incorporated with a capital of $11,000 to engage in the manufacture of clay products. E. M. McLean, Frank Y. Gladney, and L. D. Nouss are the incorporators.

H. H. Hanenkratt, of Kansas City, Mo. and associates, have recently acquired a large tract comprising about 1,373 acres of land containing large deposits of fire-clay, and are planning for immediate development.

New Jersey

Workmen are engaged in dismantling the yards of the Homestead (N. J.) Brick Works, Inc., the pallet racks having already been taken down.

Brick dealers in the Paterson, N. J., district report a few orders on hand, with quite a number of good inquiries. Alpheus Kranz, of the North Jersey Brick Co., Paterson, has been able to dispose of all of the brick he has been able to manufacture.

New Jersey brickmakers report the rail situation greatly improved, but difficulty is still experienced in securing cars promptly. The advance in freight rates will not seriously affect them at this time when shipments are small, altho these advances will be seriously felt later when the market improves.

The building situation in Newark, N. J., and vicinity has not shown any decided increase in activity during the past two weeks, altho a number of contracts have been placed for small industrial plants. However, it is thought that despite the fact that the Government has placed a ban on non-essential building projects, there is a fair volume of new construction in progress at the present time and every likelihood that numerous small structural operations will continue to be started without interruption. One of the most hopeful aspects of the building situation is the number of small dwellings being constructed to house workers in nearby war plants.

Brickmaking along the Hackensack River has improved a bit during the past fortnight, altho weather conditions have hampered the drying of brick in the yards considerably. Several yards are operating, despite the labor shortage. So far this spring not a barge load of brick has gone down the Hackensack River nor has any brick been shipped by rail but some brick are being sent to surrounding towns by motor truck, where a few relatively small operations are in progress. The outlook is not very promising for a brisk business this season, tho brickmakers are hopeful that later they will receive sufficient orders to pay for what little work has been done on their plants.

New York

The Goebel-Willetts Co. Inc., New York, has been incorporated with a capital of $30,000 to engage in the manufacture of clay products. P. G. Willetts, Effingham, Ill., and A. M. and J. Goebel, Jr., Nyack, N. Y., are the incorporators.

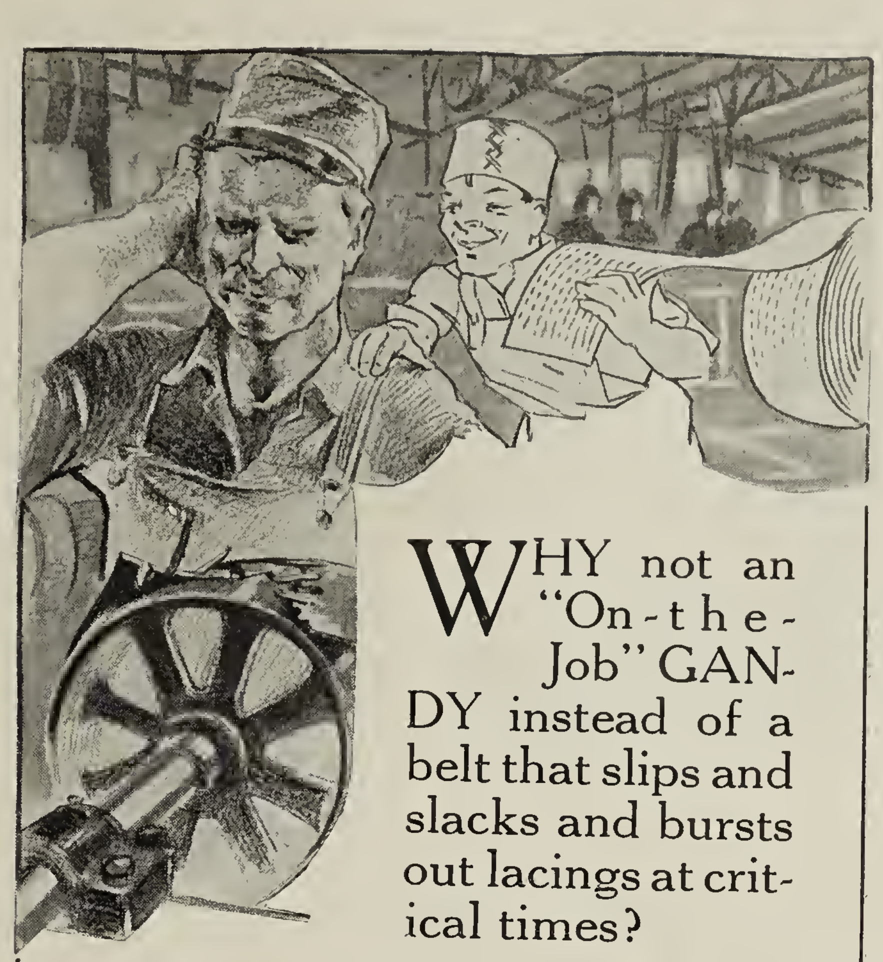
The value of building permits issued at Auburn, N. Y., for the month of May shows a 100 per cent. increase over corresponding figures for May, 1917. The present month promises to go ahead of June, 1917, as several manufacturing concerns are planning extensions. A decrease in the value of permits was shown by the records at Binghamton, N. Y.

The city of Ithaca, N. Y., will receive $115,000 of the $60,000,000 appropriation for the building of homes for workmen in the Thomas-Morse Aircraft plant and in the Morse Chain Works. Both companies during the past few weeks have been buying up tracts of land near the plants and it is practically assured that the houses will be built in this section.

Conditions are becoming cramped in Geneva, N. Y. A new shell plant has sprung up there since the war began and hundreds of workmen have flocked to the city. They have been unable to find houses. The result is that more than 700 workmen employed in Geneva are forced to commute. The Geneva Federation of Labor has taken up the matter and has arranged a meeting with the building supply dealers, Chamber of Commerce, contractors and leading business men. An effort will be made to get government help if the local men are not able to handle the situation.

Immediate response on the part of the Elmira, N. Y., public has averted a crisis that threatened at one time to seriously cripple the production of the Willy-Morrow plant in that city engaged in the manufacture of aeroplane parts. Officials of the company and city authorities published widespread appeals to the people there to take workers in their homes for the period of the war, telling them that to house a war worker was as patriotic a move as to house a soldier. The response was quick and altho there is still a shortage the greater proportion of the workers have been accommodated. The greatest difficulty there is providing for the men who have moved to the city with their families.

The housing situation in Buffalo, N. Y., is still serious and indications are that unless the demand for houses there diminishes that the government will take charge and direct a housing survey. Such surveys have been made in other cities in the state by government agents and realty men here would not be at all surprised if the same course was followed there. There are no houses for sale in Buffalo. A few have been placed on the market but they have been quick-



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Genuine GANDY stitched cotton duck belting is the outcome of long study of traction power, shafting, machinery and all the elements that enter into its use.

Genuine GANDY belting never cracks, rots, stretches. It stands the abuse of sun, rain, heat, steam, oil, grime and acid fumes, and is equally efficient for inside or outside work.

Many GANDY belts now in use have been on the job without intermission for periods of from 20 to 30 years.

Don't trust your production to slipshod belting.

Replace your "slackers" with "honest-to-goodness" workers.

Use our Engineering Department to secure the size and ply GANDY best suited to your particular work — and to be sure of the genuine GANDY BELT, look for the GREEN EDGE and Gandy trademark.

Faithfully,
"On-the-Job" GANDY
Service Manager

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New York Branch: 36 Warren St.

GANDY BELT
Stitched Cotton Duck

SAY I SAW IT IN BRICK AND CLAY RECORD

ly snapped up, some by workers and others by men who have taken advantage of the soaring rents and are holding them for the war period to benefit by the high rates for housing facilities now prevailing.

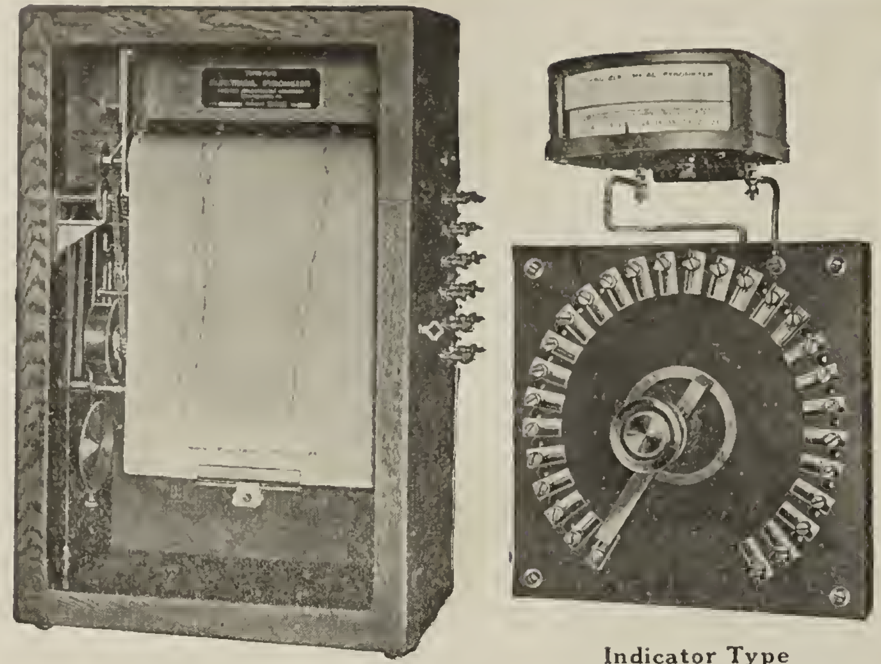
Ilion, N. Y., residents are making a determined effort to get a slice of the federal housing appropriations. The Remington Arms plant is located in this city and its force of employes has been nearly tripled since the war began. These workers have been unable to find homes in the city and have been forced to commute from as far away as Herkimer, Little Falls and even Utica. A housing corporation has been organized there with 1,000 shares of stock being sold to citizens at $100 per share. Several mass meetings have been held to arouse interest in the project and a hundred or more shares have been sold. F. C. Butler, of Washington, in charge of the industrial service section of the Ordnance Department has written the Ilion Chamber of Commerce that as soon as possible a representative of the government will be in the city to take up the matter.

Announcement has been made that W. G. Dove & Son, who for many years have manufactured brick at their plant north of Geneva, N. Y., have purchased the tile yard equipment of W. S. Childs, near Seneca Castle, N. Y. This equipment will be used for the production of drain tile in connection with the present business of brick manufacture. There has been an increased demand for tile in central New York and Mr. Dove is planning to erect a new kiln at his plant to handle this new line of business. It is estimated that the output of the plant will be approximately 15,000 tile and 20,000 brick per day. An advance order for 50,000 tile has been received from A. A. Post, this tile to be used in an extensive drainage system at the White Spring Farm near Geneva. Other farmers in this section are also figuring on ditching and tiling operations. It was this manifest demand within a few miles of the tile plant, that induced Mr. Dove to engage in the manufacture of drain tile.

Coincident with the passage by Congress of the bill appropriating $60,000,000 for the construction of homes for workers in war plants, government representatives appeared in a number of Central New York cities where such houses are imperatively needed. The first place visited by the agents was Watertown, N. Y., where the necessity for more houses is perhaps more pressing than in any other city of the state. More than 7,000 additional workmen have been brought to Watertown since the United States entered the war, most of them for employment in the plant of the New York Air Brake Co., which is working night and day on war orders. These agents conferred immediately with officials of the housing corporation which has been formed in Watertown to secure local capital to place with the government money toward the erection of upwards of 700 new homes. L. K. Sherman, of Washington, first assistant engineer of the government housing board; H. E. Davis, Calvin Kressling, L. M. Whitehouse and E. N. Cleveland, all of New York, were the government's representatives. With F. H. Lamon, secretary of the Watertown Chamber of Commerce, E. W. Sayles, city engineer and others, the party inspected probable sites for the miniature villages that are to be built in the vicinity of the plant.

Ohio

The Claycraft Brick Co., of Columbus, Ohio, has secured an order for 100,000 face brick for a jail in Douglass County, Wis. It is to be built during the summer.



Multiple Record Type

Indicator Type With Selective Switch

Thwing Pyrometers

have been selected for the $30,000,000 U. S. Government Explosives Plant, Charleston, W. Va.

This plant, being erected by the Thompson-Starrett Co. is the biggest single work of its kind under construction, and being for the most important requirements of the government, is to have the best equipment that money can buy.

The selection of 14 systems of Thwing Pyrometers with 12 thermocouples each for use here is therefore undisputable evidence of Thwing superiority.

Thwing Instruments of the type used here have been tested, proved, re-tested, improved, subjected to service conditions, *and have made good* where only the most accurate and reliable apparatus could survive.

The same brains and manufacturing facilities that brought Thwing Pyrometers to their position of recognized supremacy are available for solving *your own* heat treating problems.

Why not at least avail yourself of our free engineering advice?

THWING INSTRUMENT CO.
3336 Lancaster Avenue Philadelphia
(33)

The Columbus (Ohio) Fire Brick Co., has been made Central Ohio representative for the Atlantic Terra Cotta Co., and the American Enameled Brick & Tile Co., both of New York City.

Fire early in the morning of June 2 caused $10,000 damage to the Ohio Brick Co.'s kiln sheds, at the end of Consaul Street, Toledo, Ohio. The fire was caused by overheated kilns.

The Queen City Shale Brick Co., Cincinnati, Ohio, is the name of the new organization which has succeeded the Anders Shale Brick Co. Operations are to be started shortly at this plant.

The Burton-Townsend Co., of Zanesville, Ohio, manufacturers of brick and clay products, is running at full capacity. The concern operates two brick plants, making paving brick. Several large contracts have been secured which makes it necessary to increase the production of the plants.

Common brick in Columbus and central Ohio territory is now selling at $13 to $14. The recent advance was necessary because of the increased cost of manufacture and delivery. If the new rate goes into effect June 25 another advance in common brick is inevitable.

Most of the face brick plants in the Buckeye State have been using stocks out of their yards and are not operating their factories. Plants making fire brick are being operated with full forces as there is an exceptionally strong demand for fire brick.

The plant of the Mitchell Brick Co., Cincinnati, Ohio, altho in operation, has been experiencing considerable difficulty in securing labor. A large number of its present workers are expecting to be called by the government at any time so it is doubtful as to just how long the company will be able to continue operations.

The second disastrous fire within a month at Cridersville, Ohio, destroyed the large brick and tile manufacturing plant of John Beerline, on May 22, causing a loss estimated at $6,000. The falling of a kiln roof started the blaze, and about fifty tons of stored coal and heavy timbers furnished a steady flame. Mr. Beerline has operated the plant for the past eighteen years.

Shipping facilities for brick and clay products in Ohio have been improved slightly during the past few weeks. This is especially true on the Hocking Valley Railroad while other roads appear to be in a better position as to car supply. Some embargoes are still in force holding up shipments to certain sections but on the whole the situation as far as shipping facilities go, has been improved.

James R. Marker, commissioner of the Ohio Paving Brick Manufacturers' Association, reports considerable hope of the federal officials abrogating the advance in freight rates on paving brick on existing contracts. As the advance will amount to approximately $2 per thousand, many existing contracts cannot be carried out if the new freight rate is allowed to stand, consequently it is believed that some arrangement will be made to relieve the contractor or manufacturer from paying the advanced rate to fill old contracts.

In accordance with plans adopted by the entire Cleveland production district recently, the Columbus war industries board practically has completed its organization. Eight counties comprise the Columbus division but a request has been made that Fairfield and Pickaway Counties be added. Fred A. Miller is chairman of the Columbus division organization; W. H. Hoagland, vice chairman, and A. R. Leonard, secre-

Producer Gas
for
Brick Burning

Its uniform quality must be assured.

It must be supplied in quantities to meet the varying demands of this particular service.

To insure these results install

The R. D. Wood
Gas Producer

A size to suit every requirement.

For the small plant—
The hand poked type.

For large installations—
The mechanically stirred producer.

R. D. Wood & Co.

400 Chestnut Street
Philadelphia, Pa.

FOOD
Will Win The War

No one will argue to the contrary—we all know this is absolutely true—"Our Boys" must have the food to give them strength—"Our Allies" are also depending almost wholly on America.

But—

Farmers need drain tile in order to increase their yields—yet they hesitate to order tile because they can't get hand labor to lay it.

You Drain Tile Men!

Make it easy for the farmers to dig ditches and lay tile—by doing so you are just as much directly connected with the prosecution of the war as any man in the ranks of the army.

Buckeye
Traction Ditching
Machines

will help you solve this problem—they are doing it for other tile manufacturers—and they are increasing their sales and profits, too.
Write us for information and literature—also the names of tile men to whom we will refer you.

The Buckeye
Traction Ditcher Company
Findlay, Ohio

tary. As chairman of the division organization, F. A. Miller is also a member of the executive committee for the Cleveland production district, of which organization J. H. Foster, president of the Hydraulic Pressed Steel Co. of Cleveland, is chairman.

Brick and clay products interests are in the lead in the organization of central Ohio for war industries. The organization, which has its head in Columbus, with William A. Miller as president, has branches in many of the surrounding counties. Various industries are represented on the board. W. M. Julian of Newark is in charge of the clay products industries of Licking county; C. L. Casey, of Guernsey County and W. H. Hoagland of the Claycraft Brick Co., Columbus, is in charge of clay products in Franklin County.

Under restriction imposed by the war the way has been cleared for a resumption of road building thruout Ohio. Building will not be restricted to repair and maintenance if the Highway Commission of the State in which a project is located will certify that new construction is necessary. In co-ordinating the several departments which have to do with the movement of material, an effort has been made to bring about better fleet driving by army officers. It is apparent that the Public Roads Division of the federal government is ready to give road builders generally a clean bill of health concerning the roads that are being destroyed. In some instances bad drainage conditions have been found. Roads which deteriorate because of poor drainage represent faulty engineering. Most of the damage reported comes, however, from excessive loads being placed on roads that were well built for the purposes they were intended to serve.

Oregon

The Molalla (Ore.) Fire Clay Co., has arranged its finances and is now ready to start work on the plant. The company has a good deposit of clay which has been thoroly tested. A site of 27 acres was donated to the new enterprise and the company expects to spend $35,000 or $40,000 in establishing its plant.

Tennessee

The Caldwell Brick Co., Blountsville, Tenn., has been incorporated with a nominal capital of $5,000 to engage in the manufacture of brick. Fred Dulaney, William E. Eberhardt, Jr., Blountsville, are the incorporators.

Wyoming

The Fetterman Cement & Brick Co. has been incorporated at Douglas, Wyo., to manufacture and sell brick and other clay products. The directors of the company are Leonard J. Lohlein, Henry Metz, Gunthen Carlberg, John F. Harkin and Robert D. Hawley. The principal place of business is Fetterman, Converse County, Wyo.

* * *

POTTERY NOTES

A Resume of the Activities of
the Potters and Some Mention
of Their Plans for the Future

Pottery Delegation at Washington

Intimations by the government that pottery clays were to be placed on the non-essential list and that no more of them were to be brought into this country by ships took a delegation of manufacturing potters and clay importers to Washington recently. They appeared before the Shipping Board, and presented facts to show that imported clays were necessary to the conduct of the pottery industry. No decision was rendered at that time, but it was expected that some modification of the order would be made, enough at least to prevent damage to the industry.

Imports of clay have not been as regular or as abundant as they might have been these past few years, and a number of ships clay-laden from England have fallen victims to German submarines. At one time it was reported that 5,000 tons of clay had gone down, and on another a ship with clay was lost on the Atlantic coast. These losses have amounted to a considerable sum in dollars and cents, and in untold inconvenience and loss to plants in this country for which the clay was intended.

Details of the hearing were not made public, but it was pointed out that the pottery industry has been up against a good many trials since the war began, and if it was to continue to fill the needs of the government and the public, it would have to have some consideration.

Among the representative pottery men who conferred with members of the War Board at Washington, D. C., were the following: Marcus Aaron and W. E. Wells, Homer Laughlin China Co.; C. Ashbaugh, West End Pottery Co.; Patrick McNicol, Salem China Co.; W. L. Smith, Jr., Taylor, Smith & Taylor Co.; W. C. George, W. S. George Pottery Co.; C. B. Sebring, Sebring Pottery Co.; Geo. C. Thompson, C. C. Thompson Pottery Co.; A. M. Maddock and D. W. Scammell, Maddock Pottery Co.; C. H. Cook, of the Cook Pottery Co.; and E. D. Torbett, of the Onondaga Pottery Co.

* * *

Election of National Brotherhood Officers

Edward Menge and John T. Wood, both of East Liverpool, Ohio, were elected president and secretary-treasurer respectively of the National Brotherhood of Operative Potters, in the annual referendum election. Other officers names were: First vice-president, Frank H. Hutchins, Trenton, N. J.; second vice-president, Geo. Chadwick, East Liverpool; third vice-president, Louis Driber, Philadelphia; fourth vice-president, Sheldon Moore; fifth vice-president, George Cartside; sixth vice-president, Wm. Cope, all of Trenton; seventh vice-president, John Shingler, East Liverpool. It was voted to continue the office of health inspector now held by William Musset, Trenton. Potters in Ohio, Pennsylvania, New York, New Jersey, Indiana, West Virginia and Canada voted at the election.

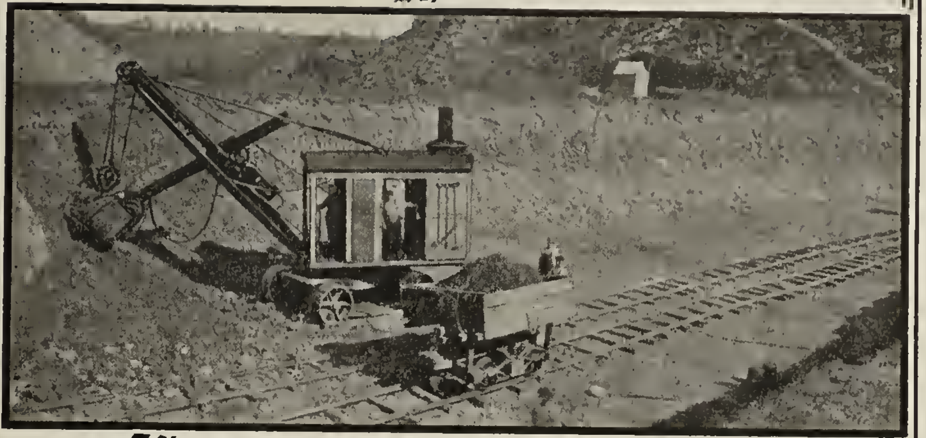
* * *

Improved Conditions Among Potteries

Work in the potteries is going right along in spite of the fact that each succeeding draft for troops takes more men from the clay shops and kiln sheds. Estimates that the East Liverpool potteries have lost on an average of one and a half men for every kiln in the district is shown by the reduced forces, but those who are left are doing better than they have for some time.

This decrease in production is expected to continue altho every possible effort is being made to make up the deficiency. Orders are abundant and day after day sees increased demands made upon the potteries. Shipments are going forward a little better, and potteries generally report improved conditions, such as they are.

Erie Revolving Shovels



YOUR work requires a REAL shovel

It is easy to dig earth, but shale and stiff clay are mighty hard digging—and dynamite costs a pretty price these days.

In order to excavate your raw material with little or no blasting, and at the same time be sure of a steady supply, you need a steam shovel with EXTRA STRENGTH built into it.

The ERIE is built far stronger than the usual standard of steam shovel construction.

It is the ERIE'S EXTRA STRENGTH that is selling so many ERIES for brickyard service. Stronger truck frame, stronger boom; larger bearings through and through. The ERIE has extra strength at every point of wear and strain.

This is the shovel built for the hardest brickyard service.

We have a new Bulletin that tells what the ERIE is, and what it can do on your work. Write for Bulletin "B."

Ball Engine Co., Erie, Pa.

"Cuts Down Labor Costs"

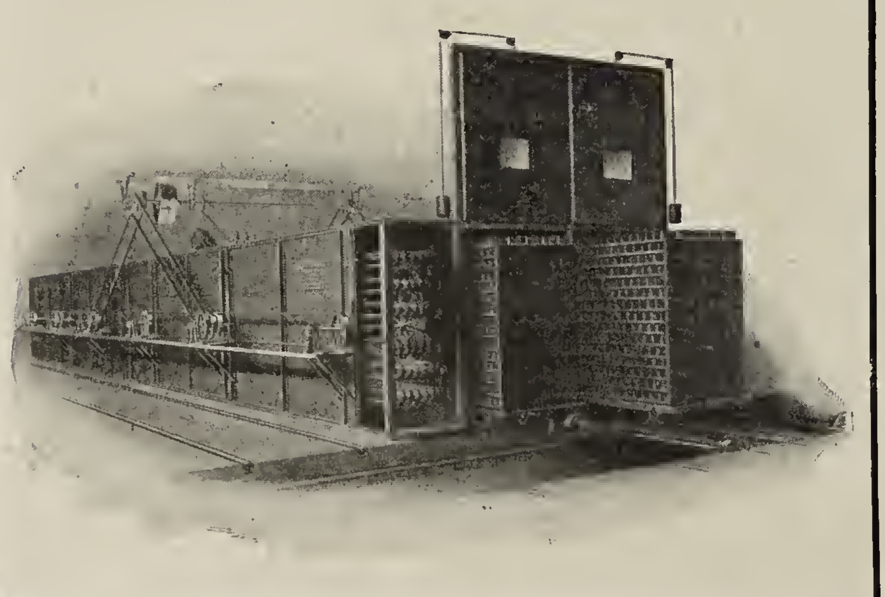
One of the four BIG reasons why manufacturers of refractories and other high grade clay products are so elated these days with their

"Proctor" DRYER

is because the "Proctor" cuts down labor costs over all other drying systems. This saving varies with the nature of the product and the general efficiency of the other equipment. Yet—it is a genuine labor saving, and that means much in these times.

If you want to know how you can produce "Better Ware at Lower Cost" write for our Book of Facts and the names of users of "Proctor" Dryers.

The Philadelphia Textile Machinery Co.
Sixth Street and Tabor Road
Philadelphia U. S. A.



Wage Conference Brings Victory to Potters

Sanitary ware potters won a victory in the wage conference at Atlantic City with the Sanitary Potters' Association. Their committee was granted a general increase of 15 per cent. in place of the present advance of 10 per cent., which went into effect last August. The conferees also provided for the appointment of a committee to take up the question of pay to kiln men for placing lavatories. The advance will go into effect the first pay after June 1. The National Brotherhood of Operative Potters requested the meeting because of the unrest of the men. It was stated that the deliberations had resulted satisfactorily.

* * *

Among the Potteries

The large pottery plants at Evansville, Ind., have been operated on good time for the past month and the business outlook is said to be very good, in spite of abnormal conditions caused by the war. The pottery manufacturers in that section are looking with favor upon the proposition of the federal government to put a line of steamboats and barges on the Ohio River and other inland streams of the United States. This is believed to be an important step to relieve the freight congestion of the railroads. Evansville is planning to build large dock facilities on the river front to help the government along in this big undertaking. Pottery manufacturers are also glad of the recent taking over of the Evansville & Indianapolis Railroad by the Chicago & Eastern Illinois Railroad as it is pointed out this will greatly facilitate shipping problems from Evansville to northern points. The Evansville potteries have felt the labor shortage to some extent but the manufacturers say that they have not experienced as much trouble along this line as they had anticipated several months ago.

Harry Bailey of East Liverpool, retiring manager of plant No. 5 of the Homer Laughlin China Co., was made the recipient of a traveling bag and silver mounted silk umbrella by the employes of the shop. Mr. Bailey left Newell plant to accept the position of general manager of the Shenango Pottery Co. at New Castle, Pa. W. E. Wells, Jr., son of W. E. Wells, secretary-treasurer of the Homer Laughlin China Co., has been named as Mr. Bailey's successor as manager of the No. 5 plant. James E. Miels, who up to about two years ago was connected with the No. 4 plant of the Laughlin holdings, comes from an East End flint mill to take the position as timekeeper at the No. 5 works, the position formerly held by Mr. Wells. George Neal has been elevated from the position as foreman of the clayshops to superintendent of the clayshops.

The serious effect of the war upon the sanitary pottery industry in Trenton, N. J. and nearby sections is forcibly reflected by the fact that the Thomas Maddock's Sons Co. has offered for rent its large sanitary plant at Perry Street and the Delaware and Raritan Canal for the period of the war. It is said that the demand for sanitary products has been reduced approximately fifty per cent. of what it was two years ago. Non-operation of the Perry Street plant of the Maddock company will not interfere with operation of the adjoining plants of this big sanitary enterprise. Plans have been made by the company to continue the operation of the other plants in a way that will meet all of the best business interests of the company.

T. A. McNicol, president, treasurer and general manager of the T. A. McNicol Pottery Co., East Liverpool, Ohio, sees that all the employes at his plant who answer the call of Uncle Sam have the right time by presenting them with a serviceable wrist watch.

* * *

Clay Industry Honor Roll

In addition to the names published on the Honor Roll appearing on page 1048 of the June 4 issue of *Brick and Clay Record*, the following are now in the service of Uncle Sam:

WM. E. DEE CLAY MFG. CO., CHICAGO, ILL.

Simon R. Dee, Ordnance Dept., Gun Crew.
S. Allerton Dee, Navy Dept., on the L. C. Hannah.

LAKEWOOD ENGINEERING CO., CLEVELAND, OHIO.

Private Adolph Gedeon, Co. L, 331st Infantry, "Over There."
Sergt. Herman Ludwig, Co. L, 331st Infantry, Camp Sherman, Ohio.
Lieut. Ellsworth Sherwood, 322d Field Artillery, Camp Sherman, Ohio.
Private Wilson M. Grayell, 145th U. S. Infantry, Medical Detachment, Camp Lee, Va.
Lieut. George M. Comey, U. S. Air Service, France.
Private Frank A. Roney, 105th Field Signal Battalion, Camp Albert L. Milles, Garden City L. I.
N. Whitehead, U. S. Navy.
J. A. Vance, Greenpoint Branch, Y. M. C. A., Brooklyn, N. Y.
Private H. M. Toole, Headquarters Supply Co., Camp Hancock, Ga.
W. J. Meermans, Co. 1, 1st Replacement Regt., Camp Gordon, Atlanta, Ga.
Frank Foster, Co. 1, 1st Replacement Regt., Camp Gordon, Atlanta, Ga.
Frank Stoffel, 15th Co., 2nd Infantry, Camp Gordon, Atlanta. Ga.
Elmer J. Blass, Co. E, 331st Infantry, Camp Sherman, Ohio.
A. G. Barton, U. S. Navy.

ROESSLER & HASSLACHER CHEMICAL CO.

O. Anderson, Engineers Division, Ft. Leavenworth, Kan.
F. P. Bartow, Coast Artillery, Ft. Wadsworth.
S. Bziengelewski, National Army, Camp Dix.
R. S. Bly, Flame & Gas Division, Washington, D. C.
Leon Berry, National Army, Camp Dix.
Theo. J. Brickze, National Army, Camp Dix.
M. H. Collins, Aviation, Camp Green, N. C.
Steve Dametch, Naval Reserve, Pelham Bay.
John J. Dwyer, Navy, location unknown.
Anton Desserick, National Army, Camp Dix.
Jos. C. Dittmar, Gas & Flame Division, Philadelphia.
Wm. Dockwell, National Army, Camp Dix.
Norman Decker, Engineers, Ft. Slocum.
Wm. Emerick, Navy, location unknown.
Chas. Greiner, National Army, Camp Dix.
Arthur Geissing, 442nd Motor Truck, location unknown.
Mike Gerba, National Army, Camp Dix.
R. B. Gandy, Aviation, Ft. Slocum.
Louis Hanson, Infantry, Ft. Slocum.
Erwin Helwig, National Army, Camp Dix.
Ray Helwig, National Army, Camp Dix.
W. Hanson, National Army, location unknown.
Fred Jarrett, National Army, Camp Upton.
F. E. Kohl, Jr., Navy.
Chas. A. Kubick, National Army, Camp Dix.
Walter Larson, National Army, Camp Dix.
John Lewondowski, National Army, Cap Dix.
N. Larson, National Army, Camp Custer.
Andrew Laskody, Infantry, Ellis Island.
Robert Lipkin, National Army, Camp Grant.
J. Meerssemann, Navy, location unknown.
Otto Moser, National Army, Camp Dix.
Fernando Morin, Aviation, Ithaca, N. Y.
Armond Meyer, National Army, Camp Dix.
George Meyer, Signal Corps, location unknown.
Harry T. McKeown, National Army, Camp Dix.
Steve Mihancki, location unknown.
Martin Kosinsky, National Army, Camp Dix.
Patrick O'Brien, National Army, Camp Dix.
Harold Peterson, Marine Corps, location unknown.
Wm. E. Pliske, Marine Dept., Philadelphia Navy Yard.
S. Payne, National Army, Camp Dix.
James Romer, Naval Reserve, Newport, R. I.
Paul Richter, Cavalry, Ft. Slocum.
Hans Roessler, Coast Artillery, Boston, Mass.
Robert Reid, Engineers, Ft. Slocum.
Henry Rasmussen, Navy, location unknown.
Geo. F. Sneath, Naval Reserve, Pelham Bay.
Frank Smith, Motor Truck Division, location unknown.
Louis Seng, National Army, Camp Dix.
Mika Sabo, location unknown.
B. H. Stell, National Army, Camp Dix.
R. D. Smith, Navy, location unknown.
O. Tomson, Army, location unknown.
H. O. Tompkins, Reserve Corps, location unknown.
Wm. D. Thomas, National Army, Camp Dix.
Chas. A. Treen, National Army, Camp Dix.
E. Van Schoick, Aviation, Ft. Slocum.

Stanley Belting
Solid Woven Cotton
IS BETTER BELTING

Better for Conveying—
Better for Power Transmission—
Better for Elevating Work—

because it is made in a better way and of better materials.

Stanley Belting
Solid Woven Cotton

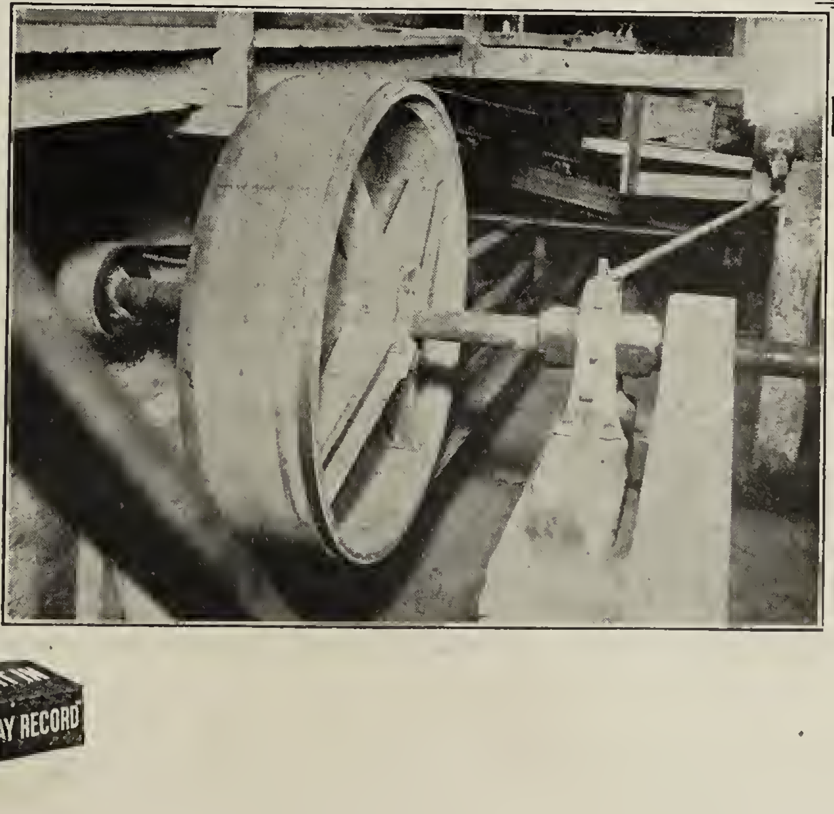
has a special construction unlike that of any other belting on the market. The **hinge weave**, for instance, is one remarkable feature, making the belt more flexible, and enabling it to fit the curve of the pulley.

STANLEY BELTING is **quality** belting and gives quality **service**—as one user expresses it.

> "We are entirely satisfied with its service, and do not believe it could possibly be bettered in any way."

Can you say that about your belt equipment?
Ask us more about STANLEY BELTING.

Stanley Belting Corp.
32-40 So. Clinton St. Chicago, Ill.



The Gateway to Better Things

BOOKS

The Master Workman has a Master Mind—he knows perfectly his own merit, and in order to increase his knowledge, he studies the methods of other men— in the only way that he can—in books. If you would be master of your work you must read and know what others know.

Here is our selected list for those who work in clay:

Bricks and Tiles	$1.25
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Bricklaying, Rudiments of Practical	.65
Bricklaying System	3.00
Brick Work (Walker)	.65
Brickwork and Masonry	3.00
Building Construction and Superintendence, Part 1, Masons' Work	6.00
Bungalows, Camps and Mountain Houses	2.00
Ceramic Calculations	1.25
Ceramic Industries—A Treatise On (E. Bourry)	5.00
Clay and Pottery Industries	5.00
Clays: Their Occurrence, Properties and Uses	5.00
Clays, Tables of Analyses	2.00
Clayworker's Handbook	2.50
Clay-Working Problems	1.50
Engines and Boilers	1.00
Engineering for Land Drainage	2.00
Estimating Frame and Brick Houses	1.00
Finding and Stopping Waste in Modern Boiler Rooms, Vol 2	1.00
Garages and Motor Boat Houses	1.00
Glazer's Book	1.00
Hollow Tile House, The	2.50
How to Analyze Clay	1.00
How to Build Up Furnace Efficiency	1.00
Kilns and Kiln Building	1.50
Land Drainage	1.50
Manufacture of Glazed Brick	2.50
Manufacture of Roofing Tile	1.00
Modern Brickmaking	5.00
Notes on Pottery Clays	1.50
Observations on Pottery	.60
One Hundred Bungalows	.50
Pottery	1.25
Powdered Coal as a Fuel	3.00
Practical Brick and Tile Book	2.50
Practical Farm Drainage	1.50
Producer Gas and Gas Producers	4.00
Refractories and Furnaces	4.00
Scientific Industrial Efficiency	2.00
Scumming and Efflorescence	.50
Steam Power	2.00

Select the books that you want the most, and we'll send them to you postpaid upon receipt of price, but we can't send any books on approval. All foreign books subject to 15 per cent import duty.

Address, Book Department,

Brick and Clay Record

610 Federal Street, Chicago, Ill.

MACHINERY *and* EQUIPMENT

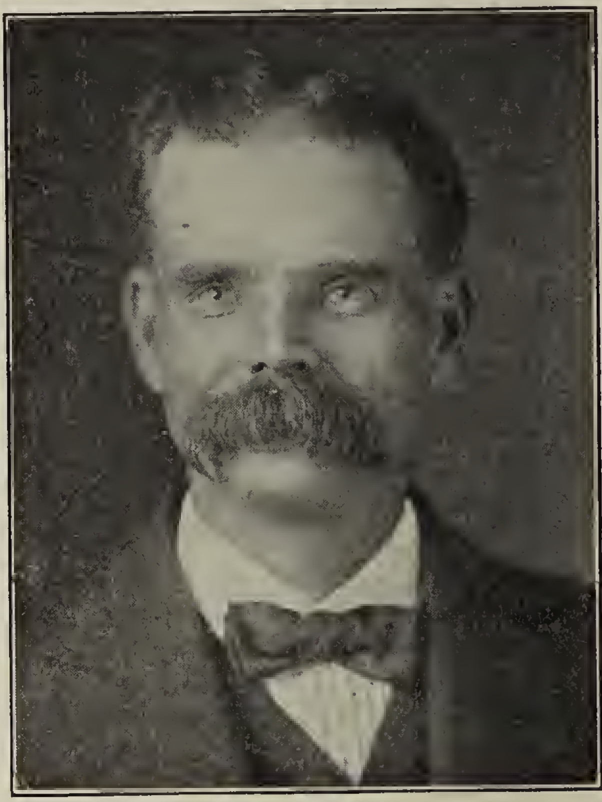
Descriptions of Machinery and Accessories and Detailed Announcements that Our Advertisers Believe will Interest Our Readers

An Efficient Burning System

The "Minter System" was conceived and perfected by M. M. Minter, at the yard of the Flint River Brick Co., Albany, Ga., where he has been actively in charge of all phases of making brick for the last six years. Convinced by his experience at this plant, and at others, that periodical round down-draft kilns, properly built, are in a class by themselves for durability, control during burning, and quality of products, he decided to overcome if possible the high cost of burning which is their chief drawback. This type of kiln is used to burn almost every kind of ware known to the clay industry, and on an average produces the largest percentage of good burns of any kiln in use.

There were two problems to be overcome in order to make this type of kiln efficient in addition to its other very desirable qualities. The first of these was the distribution of heat in each kiln and from kiln to kiln in succession. The second, almost as important, was the keeping away from the kilns any moisture.

The first of these problems was solved by a system of underground flues connecting all the kilns, each with the other, with dampers placed at proper places, so that any kiln or set of kilns could be connected with any others. The transferring of heat from a *burning* kiln, or one that is cooling, is effected by means of a fan. Experience has shown that heat from a *burning* kiln can be utilized to bring up the temperature of a *green* kiln, evenly on all sides, to more than 1,000 degrees.



M. M. Minter
Who Conceived and Perfected the "Minter System"

The second problem of drainage was solved by paving all the ground around the kilns and employing a centrifugal pump to carry off whatever water might stand in low places.

The Flint River Brick Co. installed the "Minter System" on ten of their round down-draft kilns over eighteen months ago, and since that time have burned ten to twelve million brick with it. They have been known to get their cones to start over in 48 hours after the first application of fuel to the kiln, whereas, before the installation of this system the average time for this was six to eight days. These ten kilns with one night and one day burner have turned out, since they were changed, as many burned brick as the sixteen kilns did before with twice the number of burners. Time and time again, when not hampered by lack of fuel, the ten kilns have been burned in thirty days. The material here is quite variable and in many cases it is necessary, to get proper burns, to run the heat up twelve to eighteen hours after the cones are down. This probably means a temperature of 2,500 degrees. The character of the burned brick are as a whole better than before, and show no scumming or other bad effects sometimes found in continuous kilns of other types.

If desired, this system can be adapted so that the *waste* heat can be used for drying, thus utilizing further every bit of heat in a pound of fuel.

The Minter System is protected by patent.

⁂

J. D. Fate Company Reorganization

Following the sudden death of its president, H. S. Fate, which occurred on May 26th, the J. D. Fate Co., of Plymouth, Ohio, has been reorganized with the election of John A. Root as president and Charles E. Heath vice-president. Both of these gentlemen are residents of Plymouth, and for many years have been operating a neighbor company—the Root-Heath Manufacturing Co., manufacturers of hardware specialties.

Mr. Root was a brother-in-law of the late President H. S. Fate, having married the only daughter of the founder of the company, J. D. Fate. He has also been associated with the Fate Company in the capacity of director for the past 15 years, hence is far from being a stranger in the organization.

Mr. Root will devote his time to general executive duties, while Mr. Heath will give his attention to production matters. Just as soon as arrangements can be made so these gentlemen can be relieved of duties in their former positions with the Root-Heath Manufacturing Co., they will be actively in touch with affairs of the J. D. Fate Co.

H. R. Sykes will continue as secretary and treasurer, while H. J. Votaw, who has been associated with the firm for a number of years, has been elected a director ot the company. Both Mr. Sykes and Mr. Votaw have a great many friends in the industry, and are well and most favorably known.

The company's plans call for even bigger and more ambitious accomplishments than during their past successful years, during which time they have gained a most enviable reputation in the manufacture of a complete line of clay-working machinery, and of the now famous "Plymouth" gasoline locomotive.

⁂

Hot Weather Relief

Broderick & Bascom Rope Co., of St. Louis, have issued a little book that can be carried in the coat pocket, and which every clay-products manufacturer might well carry around with him in these days of heat, coal embargoes, labor shortage, and all of the other trying conditions he must confront.

They call this "The Yellow Strand Joke Book" and the following foreword tells what and why it is:

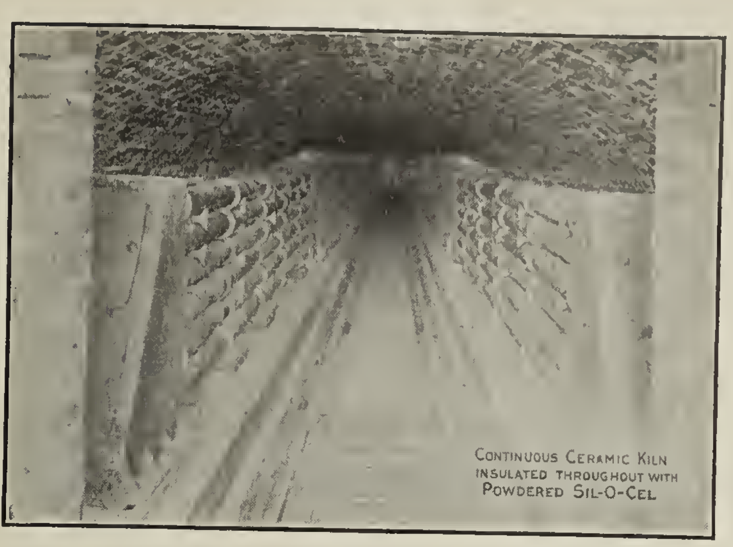
"Forewords will happen in the best regulated joke books.

"Imagine the reader plunging into an anecdotal pool without first taking a bracing shower of introductory remarks 'whether he needs it or not.' Why it simply isn't being done.

"So, like all our predecessors, we turn on the tap of explanation and let the phluent phrases phlow, trusting that they will soak in properly before the reader gently sneaks away on us.

"However, we're not going to shower you with that treatise, 'The Vivisection of Humorosity,' or 'Why Is a Joke?' We're not even going to apologize for the hoary age of some of the entries on these pages. For verily is it said that great jokes from little chestnuts grow.

"We just want to say that this book is the happy result



Continuous Ceramic Kiln insulated throughout with Powdered Sil-O-Cel

This Kiln Is Insulated with

SIL-O-CEL PREVENTS HEAT PENETRATION
TRADE MARK
MADE FROM CELITE

Instead of losing a large percentage of heat, it retains it—insuring a more uniform distribution of heat and more complete temperature control.

That's why the rejections due to over- and under-burned pieces are so small.

There are many other advantages to be derived from proper kiln insulation.

Write us for Bulletin B-5 on Kiln Insulation. It tells you how to insulate and how much heat you can save.

CELITE PRODUCTS CO.

NEW YORK
11 Broadway

CHICAGO
Monadnock Block

PITTSBURGH
Oliver Bldg.

LOS ANGELES
Van Nuys Bldg.

SAN FRANCISCO, Monadnock Bldg.

SAY I SAW IT IN BRICK AND CLAY RECORD

Coal Supply?

You will have difficulty in securing the coal necessary to the operation of your plant next spring.

It behooves you to keep in close touch with the ever changing conditions of the coal situation.

There isn't any source of information quite as complete and reliable as

THE BLACK DIAMOND

Each weekly issue of THE BLACK DIAMOND treats with conditions as they arise, and tells of the probable bearing they will have upon the future price and supply of coal.

Considering the small cost of but 7c a week ($4.00 a year), THE BLACK DIAMOND is the cheapest, safest and most satisfactory form of fuel insurance a clay-product manufacturer can carry.

Follow the path of live and progressive brick and tile makers everywhere, and become a regular reader and subscriber to THE BLACK DIAMOND,—**for over 30 years the coal trade's leading journal.**

Write now for a sample copy.

THE BLACK DIAMOND

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CHICAGO, ILL.
NEW YORK PHILADELPHIA PITTSBURGH

of a filing habit of ours. Recently, in going thru our carefully filed copies of THE YELLOW STRAND, we snickered afresh at the 'Old Yarns' which had won Yellow Strand paper weights for the thousands of you who contributed these clever stories. You clipped them from various periodicals and sent them on to us. Where they originated we know not; otherwise we would credit the discerning publishers in letters of tallest type.

"Well, we snickered afresh, we repeat, and resolved, instanter, to scatter that snicker far and wide. Hence, this Joke Book.

"Now run along—plunge in. And be warned that you'll bump into some hard B. & B. facts before you swim out on the other side. And that's no joke."

Any reader of *Brick and Clay Record* will be sent a copy of this book by writing to the company's home address. When it is received every reader should also refer to page 10 where a photograph is shown and reference made to a very interesting tramway operation at the plant of Continental Brick Co., Continental, Mo.

* * *

From Winter to Spring in 15 Minutes

"To demonstrate the ease and dispatch with which Kissel's All-Year Top may be removed, a Kissel dealer and three of his associates were recently timed in removing the All-Year Top, and it was done in exactly fifteen minutes by stop watch," says H. P. Branstetter of the KisselKar.

"The demonstration began with a Kissel enclosed sedan, double windshield, the All-Year Top, built-in for winter use, dome light, silk curtains, and all the appointments of a fashionable winter car.

"A few bolts were loosened here and there and the sedan top was ready for removal. At the given signal, it was lifted up and placed on the stands, so that the car could be driven out from below, or the top could be wheeled away. Attaching the molding on the top of each side of the open car was the next step, after which adjustment of the slanting windshield and summer top followed, and in less time than it takes to tell of it, the car was complete and ready for the open road.

* * *

The Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa., has purchased the property, business, and goodwill of the Krantz Manufacturing Co., Inc., Brooklyn, N. Y., manufacturers of safety and semi-safety electrical and other devices, such as auto-lock switches, distribution panels, switchboards, floor boxes, bushings, etc.

The supply department of the Westinghouse Electric & Manufacturing Co. will act as exclusive sales agent for the products of the Krantz Manufacturing Co., whose business will be continued under its present name.

H. G. Hoke, of the Westinghouse Electric & Manufacturing Co., will represent the supply department at the Krantz factory.

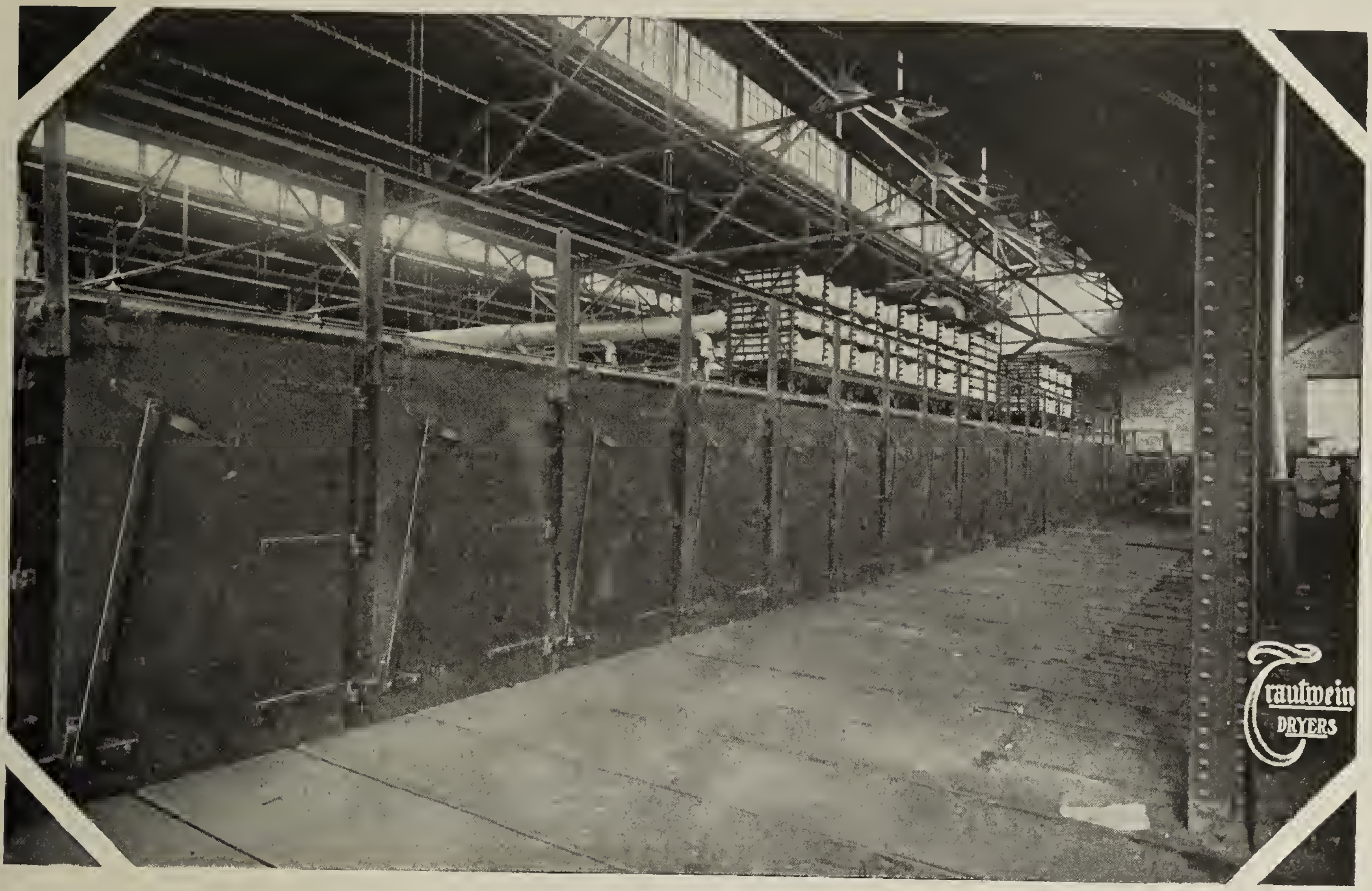
* * *

On account of engineering work, which is requiring all of his attention, E. Francis McCrossin has found it necessary to withdraw entirely from the firm of McCrossin & Darrah, representing the Link-Belt Co. in Alabama. It has been arranged therefore with John F. Darrah, previously joint representative with Mr. McCrossin, that he act singly as representative.

Mr. Darrah is to be found at 751 Brown-Marx Building, Birmingham, Phone Main 7722, and he will be glad to have you call upon him when in need of Link-Belt service. Mr. Darrah is a direct factory representative, and being nearer at hand can frequently give you prompt service which on account of distance is impossible when writing the main offices.

* * *

B. E. LaFollette, who has had charge of the engineering, sales and advertising departments for the Clarage Fan Company, Kalamazoo, Mich., has resigned to go into Government Service, July 1. Mr. LaFollette will be located in either Philadelphia or Washington as an engineer with the Requirements Division of the U. S. Shipping Board.



Drying Silica Brick in Trautwein Dryers

When the most modern and up-to-date FIRE BRICK PLANTS IN THE COUNTRY, AFTER CAREFUL INVESTIGATION, ADOPT TRAUTWEIN WASTE HEAT DRYERS because of their *economy, durability, flexibility and dependability*, HOW CAN YOU AFFORD TO HESITATE?

THE SUCCESSFUL BUSINESS MAN IS LARGELY GOVERNED BY THE EXPERIENCE OF OTHERS.

A Fire Brick dried in a Trautwein Waste Heat Dryer needs no further mention.

Trautwein Waste Heat Dryers are the Salvation of the Clayworkers' Coal Problem.

Trautwein Dryer & Engineering Co.
Foremost Drying Engineers
and Manufacturers of Drying Equipment
Technical Engineers in Clayworking
Plymouth Bldg. Chicago

Investigate Today!

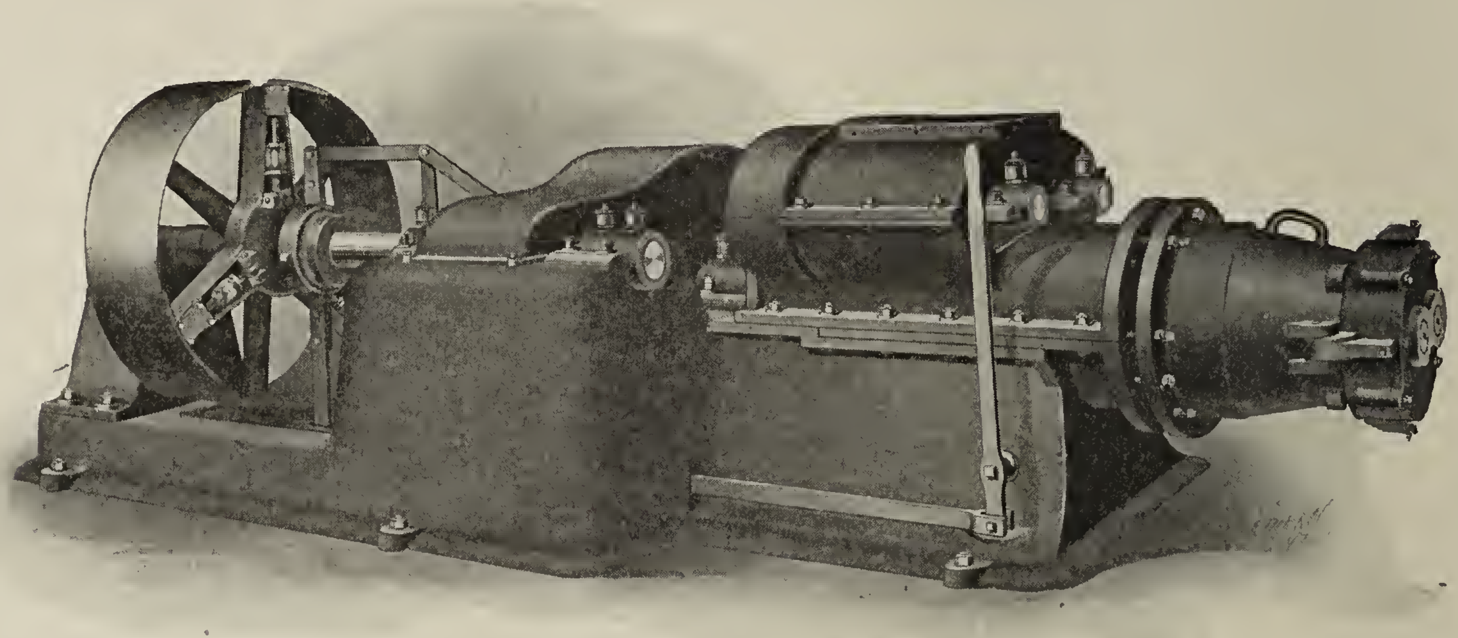
The Demand for Drain Tile

Will be greater this fall than it has ever been before—every agricultural agency of the government and the states is directing its efforts in this direction.

Are You Prepared To Meet This Demand?

You won't need to worry about the shortage of labor—nor will you be compelled to turn down orders, if you let us help you put your plant on a BIG CAPACITY basis.

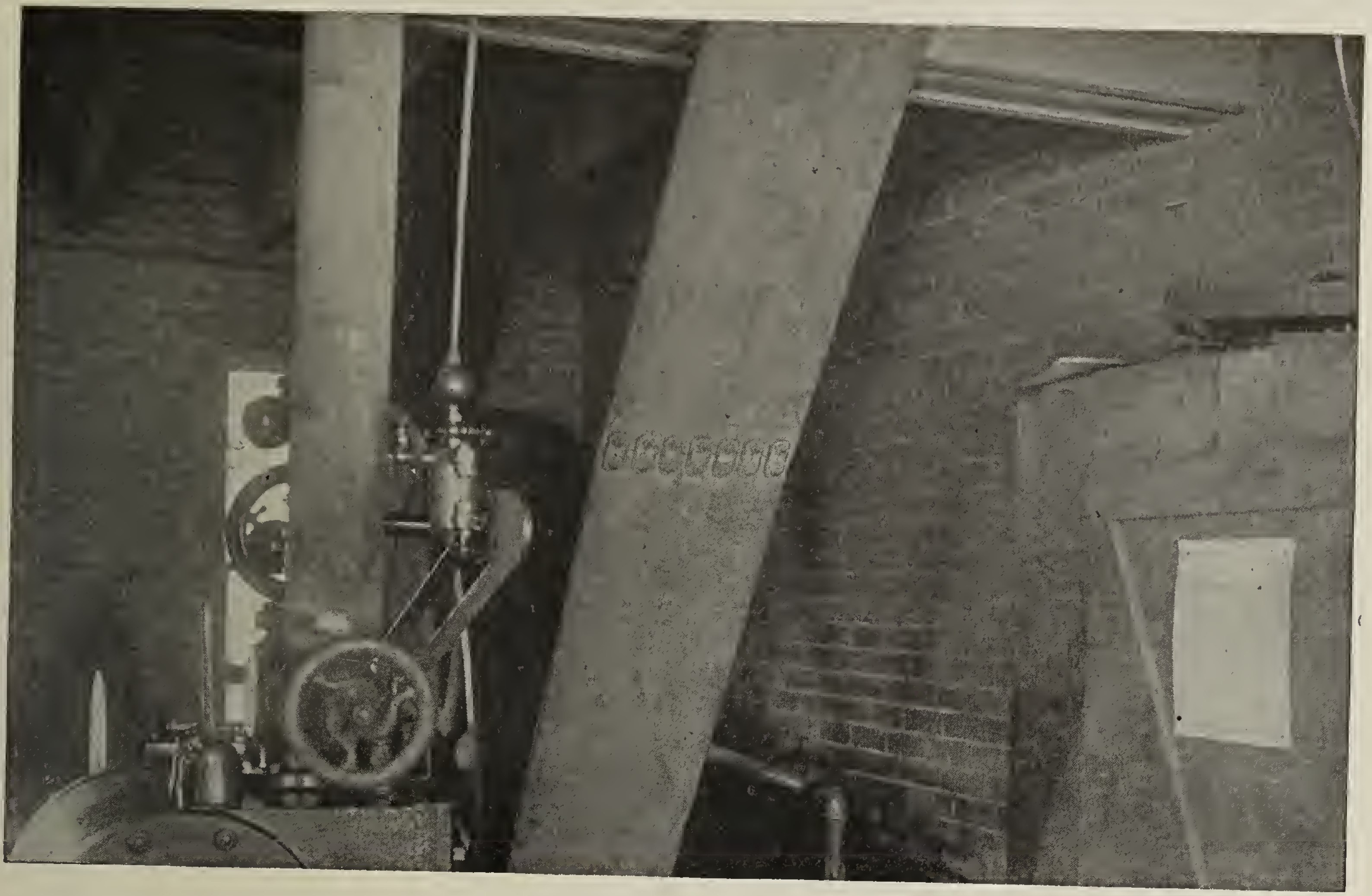
At least—let us study your needs and make our recommendations—you won't obligate yourself in any way.



The Bonnot Company - Canton, Ohio

Let Us STANDARDIZE Your Plant

SAY "I SAW IT IN" BRICK AND CLAY RECORD



A Leviathan which has been in continual operation in a Texas brick yard since 1904

ON January 23, 1917, the owner of this belt, a Texas brick manufacturer, wrote us the following letter:—

> "Gentlemen:
>
> We bought an 18″ 8 ply main drive belt from you in April, 1904 and have been running it continuously since that date.
>
> The belt has given entire satisfaction and we have only had to tighten it three times since we have been using it.
>
> Yours truly"

And we don't believe we would add anything to it.

LEVIATHAN AND ANACONDA BELTS

LEVIATHAN AND ANACONDA
ELEVATING
TRANSMITTING
CONVEYING
BELTING

for Transmitting, Conveying and Elevating

MAIN BELTING COMPANY
PHILADELPHIA

New York Chicago Pittsburgh Atlanta San Francisco

LEVIATHAN AND ANACONDA
ELEVATING
TRANSMITTING
CONVEYING
BELTING

Birmingham, England Paris, France Bulle, Switzerland Kristiana, Norway Johannesburg, South Africa Petrograd, Russia
MAIN BELTING CO. OF CANADA, LTD., Montreal, Toronto Havana, Cuba HONOLULU IRON WORKS CO., Honolulu

FULL CIRCLE SWING
THEW
POWER SHOVELS

Nearly All Clay Production Is Curtailed 50%

You have noticed that clay workers, except exclusive fire brick and drain tile manufacturers, can run only 50% normal capacity. You know that coal is to be distributed in very limited quantities.

If you have contemplated installing an Electric or Gasoline Shovel, right now is the logical time to do it. If you now own a Steam Shovel, you will be dollars ahead by replacing it with a modern Electric or Gasoline Thew.

The production of other industries, officially classed as of "Exceptional Importance", has not been curtailed. They are in the market for all kinds of equipment. Sell your Steam Shovel to them.

Limitation of your output will magnify your labor difficulty. Half-time work won't satisfy labor, and you can't afford to pay full-time wages for 50% service.

Thew Electric and Gasoline Shovels, with their economical working ability, will solve both your fuel and labor problems. The smallest Thew does the work of 30 men, at 75% less cost. These shovels are always ready for business. Fuel consumption continues only while running. No banking of fires; no waiting for steam; no boiler difficulties; no need of a fireman or licensed engineer.

Manufacturers of six sizes—sixty combinations of power shovels, built of Thew Standard Machinery Units, equipped with Combination Boom, Shipper Shaft or Horizontal Crowd—Steam, Gasoline, Electric.

"Thews are Everywhere"

The Thew Automatic Shovel Company

Lorain, Ohio

ALLIED Export Department ALLIED CONSTRUCTION MACHINERY CORPORATION ALLIED
120 Broadway New York, U.S.A.

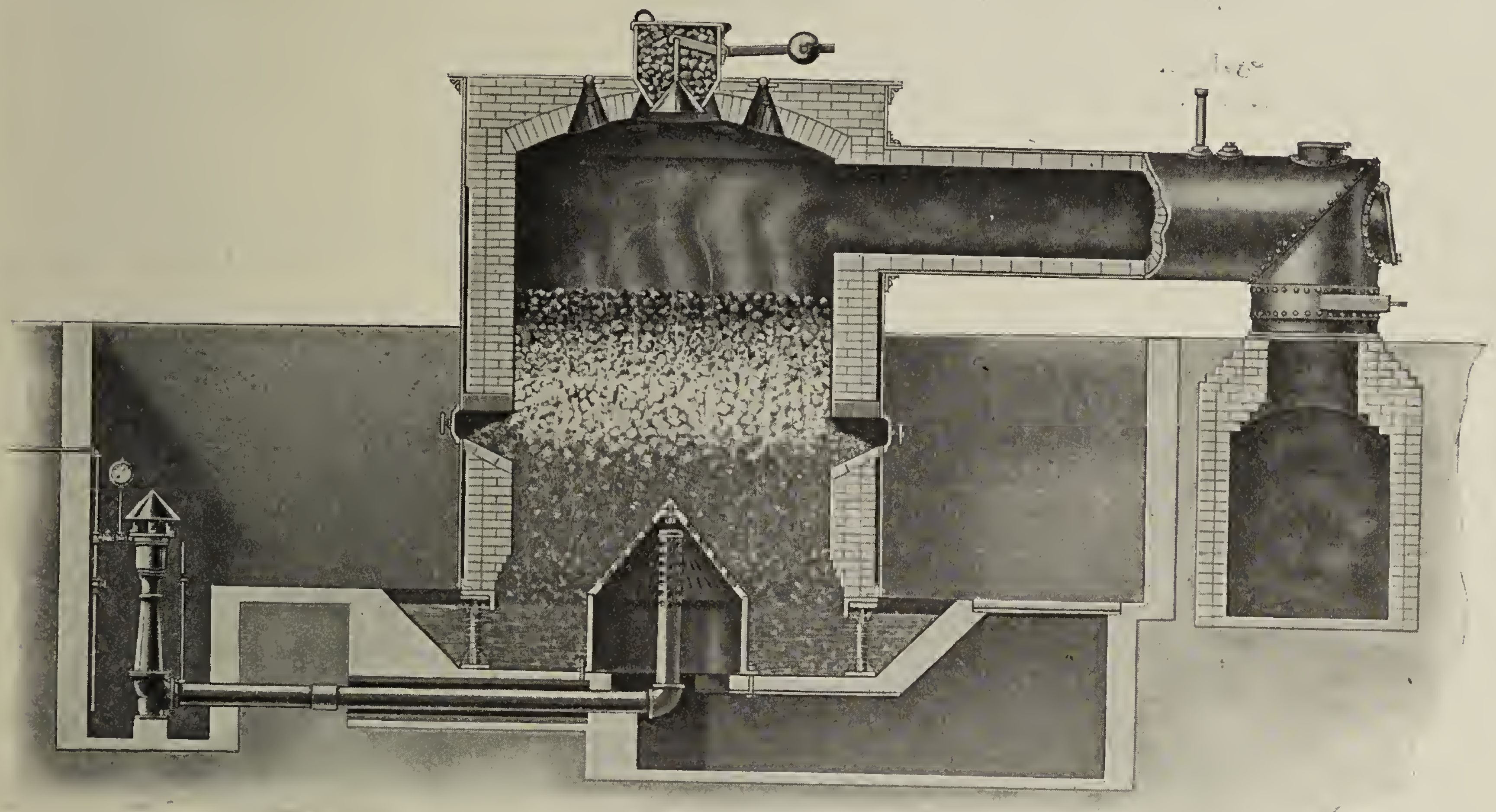
New York Office:
30 Church Street

25% SAVING

and usually more

In Coal and in Labor

Can be made by the application of



INTERNATIONAL PRODUCERS AND BURNERS

To Your Brick, Tile or Pottery Kilns

Write Us Today

International Clay Machinery Co.

Dayton, Ohio

SAY "I SAW IT IN BRICK AND CLAY RECORD"

The Best Kiln for Burning REFRACTORIES

For high temperature work on valuable ware, where the percentage of No. 1 ware must be high—use the

Didier-March
Continuous Railroad Tunnel Kiln

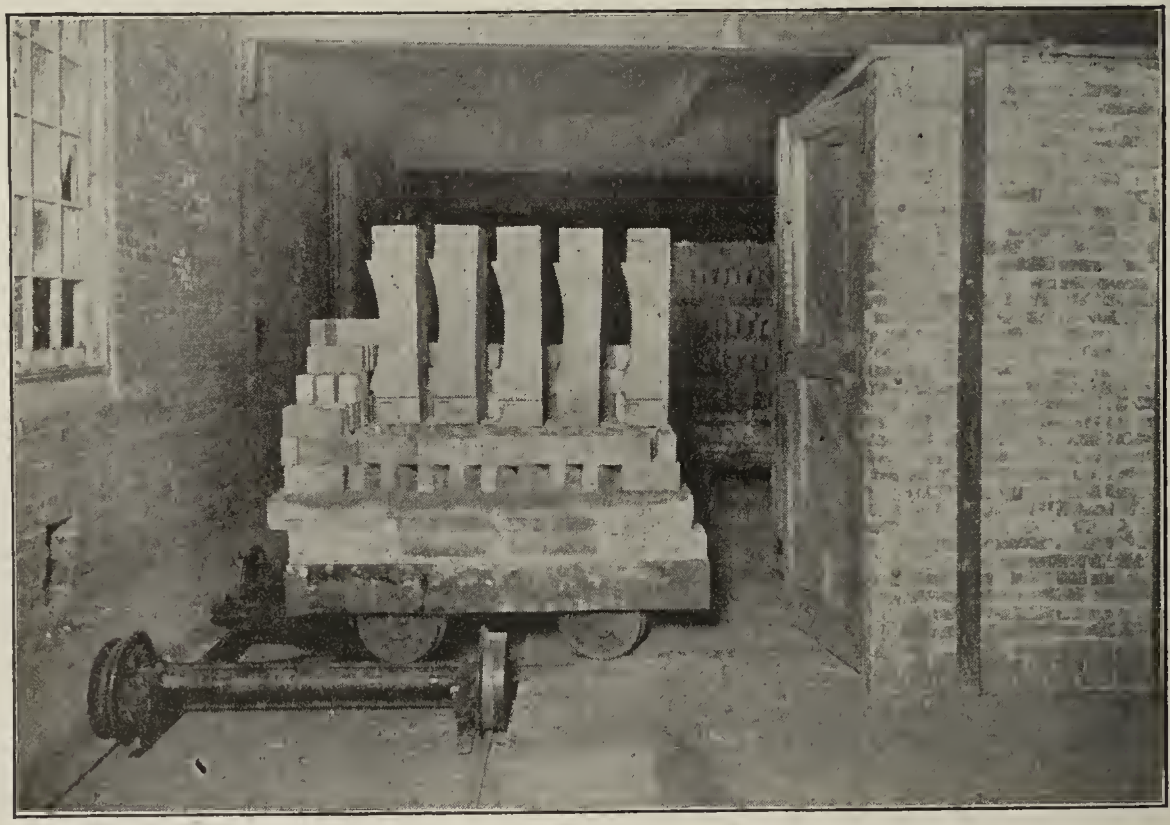
In fuel saving the kiln is supreme, and it therefore serves twice, it satisfies your patriotism while at the same time saving you money.

The repair bills are remarkably low, one kiln was burned continuously for many years without costing one cent for repairs.

The money saving in combination with a record for producing a high percent of high grade ware makes it especially attractive to refractory plants.

We will willingly furnish you with satisfactory plans for investigation.

THE DIDIER-MARCH CO., Perth Amboy, N. J.



THE CONSERVATION OF ENERGY AND THE TRANSMISSION OF POWER

What the Mines Tell You About These Belts

Of the $100,000,000 expended each year for belting, the mining industry pays most.

Belts, to it, are even a more formidable factor in production costs than they are to the brick and clay industry.

What the mines do to reduce these costs can well be done by others.

In some mining companies scrutiny of belt expense extends to maintaining officials expressly charged with the duty of reducing it.

It is significant that such companies are among the largest purchasers of Goodyear belts.

Their accurate cost accounting shows that these belts best cut the year's belting bill.

It is also significant that the mining industry's belt experts buy on the Goodyear plan of plant analysis.

They have Goodyear men make a survey of every drive, conveyor and elevator to specify the proper Goodyear belt for each.

The entire set of specifications constitutes a complete analysis of the plant's belting needs.

Goodyear men have already made thousands of such analyses.

They cover many important plants, factories and mills in every national industry.

Everywhere they are the means of effecting considerable savings.

They can do it for your plant also.

The Goodyear Tire & Rubber Co., Akron, Ohio

BELTING · PACKING · HOSE · VALVES

GOODYEAR

AKRON

SAY "I SAW IT IN BRICK AND CLAY RECORD"

WARNING

WARNING

WARNING

WARNING

During a period of four to five years past, we have spent our time, effort and much money in developing for the ceramic industry and other lines, the Underwood Producer Gas Burning System, and bringing in its use with the various plants so established, an unbounded success for the user in the manner we are representing.

As a result, it now appears that some of those who, until lately, constantly condemned the system as valueless, a failure, etc., are the very ones trying to reap the benefits of the other fellow's efforts, by now coming out in a similar way; which, any one will agree, if such procedure involves infringement of our patents, is not fair between man and man.

We therefore desire to inform all members of the ceramic industry in a general way, and others that are now, or may later become interested, that in protecting the interests of all, we have secured through the Federal Government of the United States, a number of basic patent rights with further applications pending, to act as a safeguard for those contracting, installing and using the system, as well as those interested in furthering the movement for humanity.

It is only natural therefore, that any individual or concern attempting to infringe upon such rights, be prosecuted to the fullest extent, which necessitates asking any or all to investigate carefully and satisfy themselves fully before entering into contracts with others for the application and use of any other producer gas system with periodic kilns, whether updraft, round or rectangular downdraft, or muffle kilns.

Patent rights referred to are broad and substantial, and to maintain the interests of all concerned as stated, it is necessary that we protect them to the fullest extent within our power, and which we propose to do.

The Manufacturers Equipment Co.
Dayton, Ohio, U. S. A.

WARNING

SIMPLICITY HONESTY

LINCOLN MOTORS

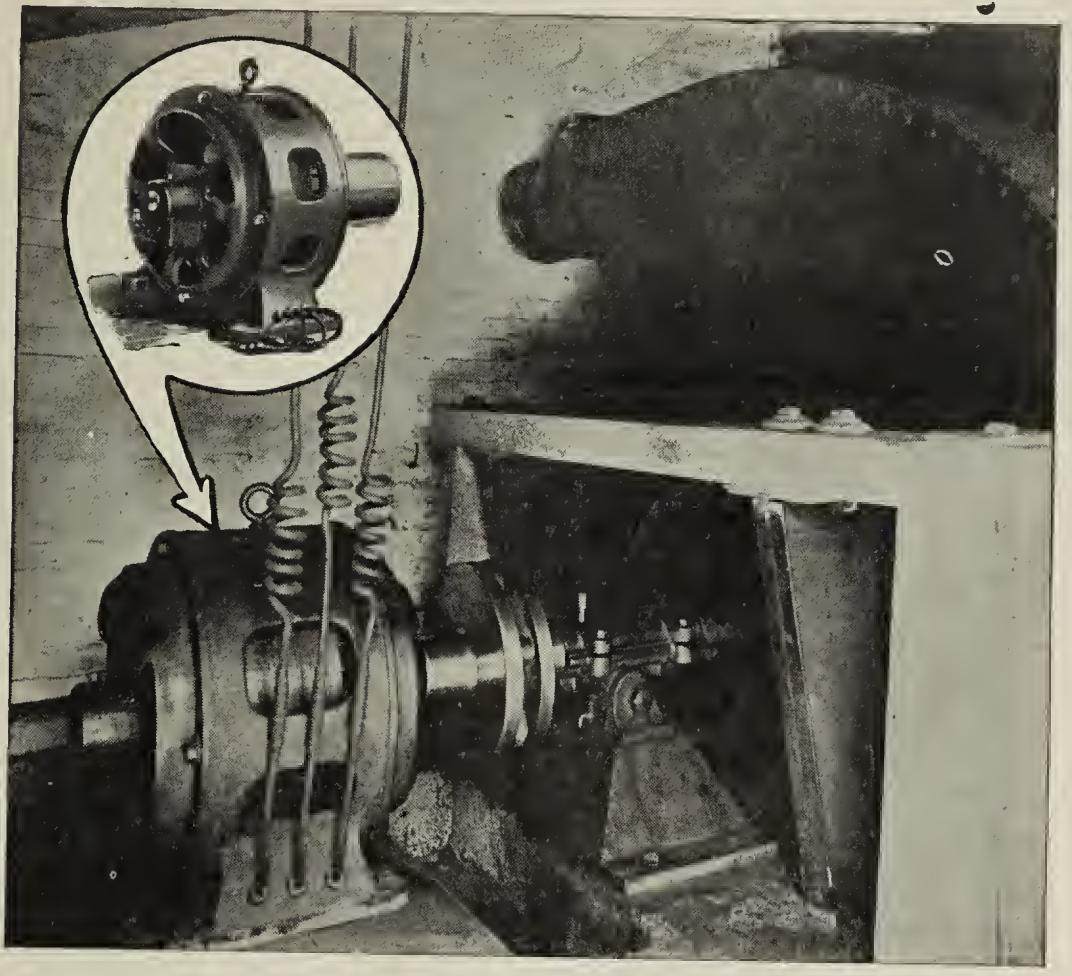
Reserve Power

—the factor that largely determines the life of your motors

If you knew exactly what the load was going to be—if hanger bearings never wore nor got out of line—if you never wanted to hitch just one more machine on to that already overloaded line shaft—reserve power wouldn't matter much.

But any of these things are likely to happen. Be on the safe side.

"Link Up With Lincoln"



This Lincoln motor has operated a "Sirocco" fan on 100% continuous overload three hours a day for several years. The plant where this photo was taken uses Lincoln Motors throughout.

This standard Lincoln Motor operated under water for over 3 years without damage to windings.

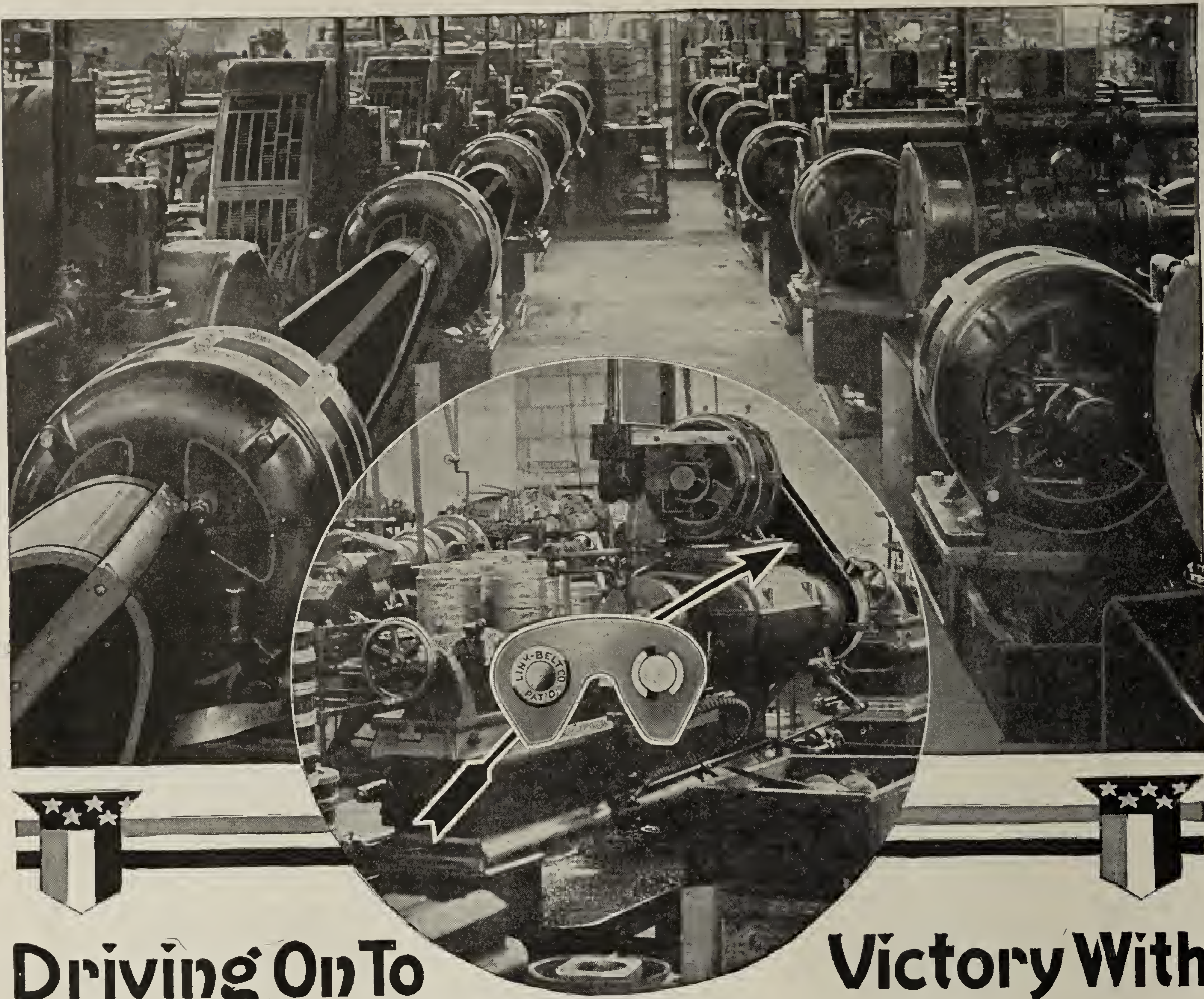
Write for Bulletin on Motors 101-B.

THE LINCOLN ELECTRIC CO.

CLEVELAND, OHIO

New York City Buffalo Syracuse Columbus	Chicago Detroit Boston Pittsburgh Minneapolis	Philadelphia Charlotte, N. C. Montreal Toronto

Agencies in Other Principal Cities



Driving On To Victory With LINK-BELT Silent Chain Drives

IN the manufacture of shells, ships, rifles, guns, cannon, clothing and food for the boys "over there", Link-Belt Silent Chain Drives are daily speeding up production throughout the length and breadth of the nation.

They are protecting the lives of Uncle Sam's sailors in submarines. They are turning the guns in turrets of battle ships. They are driving pumps and auxiliary equipment on fighting ships of every class from dreadnaughts to transports.

Isn't it possible that a driving medium with which Uncle Sam is willing to risk the lives of his men and the protection of the nation, a chain with which he is to-day driving on to victory—would prove highly efficient and reliable in driving the machinery in your plant? Think it over. Send for Data Book No. 125.

LINK-BELT COMPANY

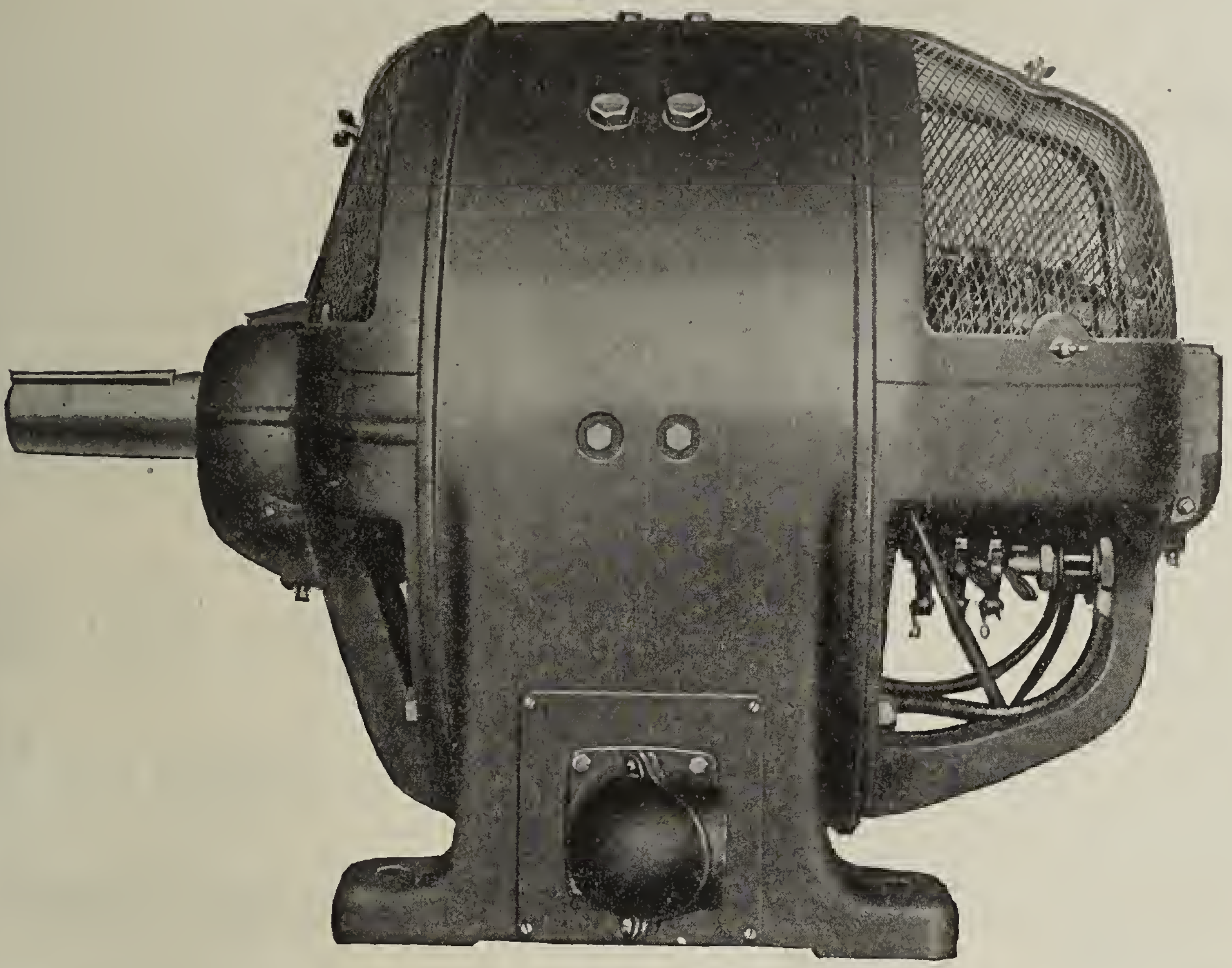
PHILADELPHIA CHICAGO INDIANAPOLIS

New York	299 Broadway	Seattle	576 First Ave., S.
Boston	49 Federal St.	Portland, Ore.	First and Stark Sts.
Pittsburgh	1501 Park Bldg.	San Francisco	461 Market St.
St. Louis	Cent'l Nat'l Bank Bldg.	Los Angeles	161 N. Los Angeles St
Buffalo	696 Ellicott Square	Denver,	Lindrooth, Shubart & Co., Boston Bldg
Wilkes-Barre	2d Nat'l Bank Bldg.	Louisville, Ky.	Frederick Wehle, Starks Bldg.
Cleveland	429 Rockefeller Bldg.	Knoxville, Tenn.	D. T. Blakey, Empire Bldg.
Detroit	732 Dime Bank Bldg.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.
Minneapolis	418 S. Third St.	Charlotte, N. C.	J. S. Cothran, Com'l Bk. Bldg.
Kansas City, Mo.	407 Finance Bldg.	Toronto, Can.	Canadian Link-Belt Co., Ltd.

LINK-BELT
SILENT CHAIN DRIVES

SAY "I SAW IT IN"
BRICK AND CLAY RECORD

Here's the new RF adjustable Speed motor



This is what it will do

Operate successfully in either direction as a motor or as a generator for dynamic braking.

Successfully commutate sudden high peak loads at any speed within its range.

Withstand sudden speed changes due to changes in field resistance.

Stand short circuits, when used for dynamic braking, and when shut down with full voltage left on field does not overheat.

Operates by drum or very simple magnetic control for automatically repeated cycles.

Assure practical freedom from commutator troubles arising from abuse or careless operation.

Show ample capacity as it is rated by test equivalent to all day load conditions met in actual service.

Complete information on this new type of motor can be obtained from Bulletin No. 41021, which will be mailed you on request.

General Electric Company

General Office: GE **Schenectady, N. Y.**

Sales Offices in all large cities

SAY I SAW IT IN BRICK AND CLAY RECORD

Browns Will Not Let Men Sleep on the Job They Boost Good Ware to Around 90%

If you could watch over your plant 24 hours of every day, it's a safe bet that things would be run right. But you can't.

There is one thing, however, that shows how your plant is running—that's the kiln temperatures. If your men sleep a few hours on a cold, rainy night, or doze off in the warm sunshine of a summer day, it always shows up in coal waste and a poor burn.

It's easy even for your most conscientious burner to get into the nap-habit, but it's expensive for you. Stop these leaks in your profits. Put Brown Pyrometers on your kilns and let them check kiln operation. Whenever your temperatures go down, let it show up on your Brown Recording Pyrometer. No wonder progressive brick men using Brown Pyrometers get 90 to 95% good ware from their kilns!

Brown Pyrometers are used now by 80% of all brick plants in this country using Pyrometers. Test out a Brown equipment in your plant at our expense. Find out how.
Write to the Brown Instrument Company, Philadelphia, or one of their branch offices in New York, Pittsburgh, Detroit or Chicago, for full information.

Brown Pyrometers

SAY "I SAW IT IN BRICK AND CLAY RECORD"

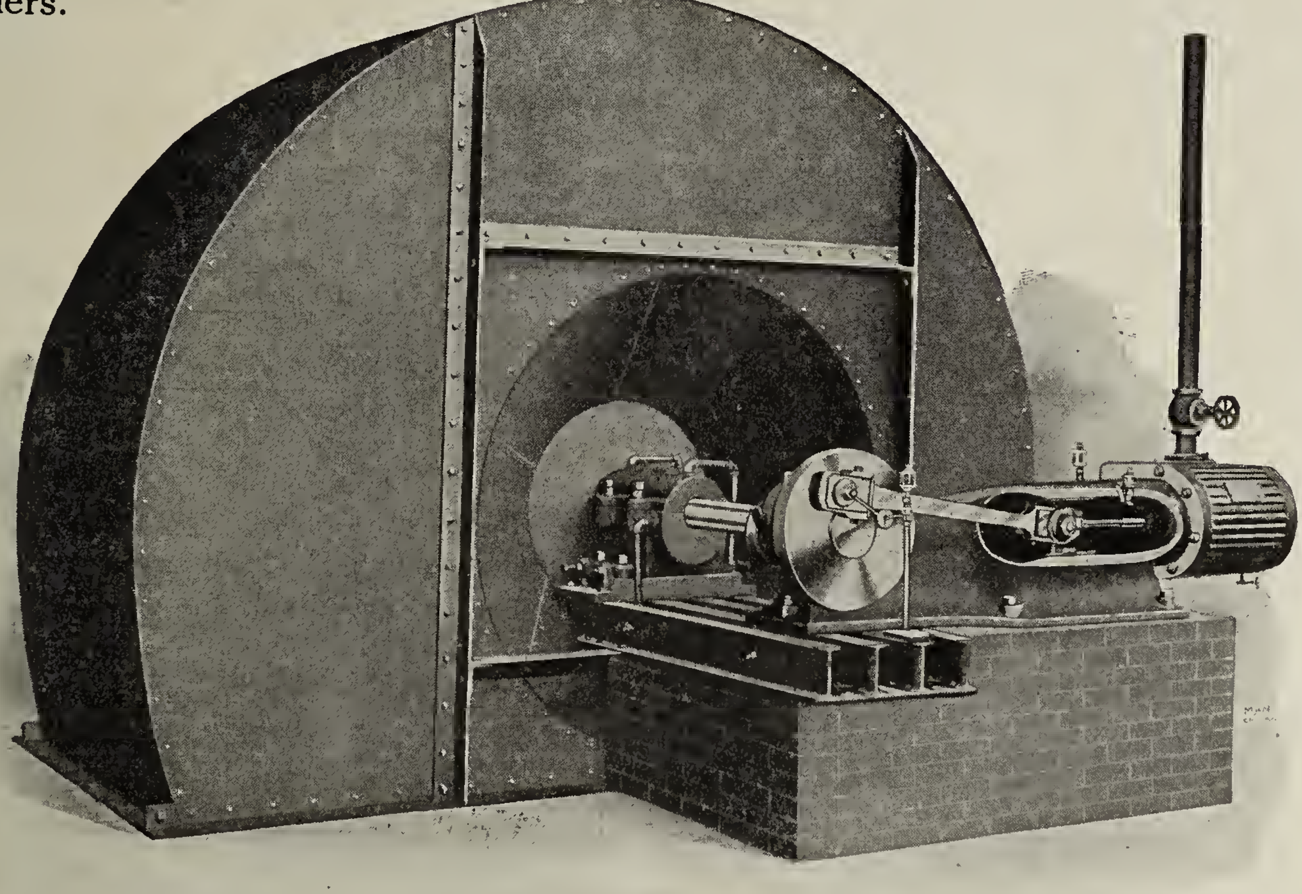
Buy War Stamps, the Little Fighters of a Big War

IT TAKES A LOT OF FUEL
MANZ

It takes so much fuel to burn brick the old way that it's no wonder the government has called a halt.

With the Haigh Continuous Kiln and a Waste Heat Dryer, of the "Built Right Run Right" kind, you can save more than half your drying and burning cost. Saves the cost of installation in a few seasons and makes dividends after that for your stockholders.

Let us give you full particulars and send you an estimate of cost and of saving

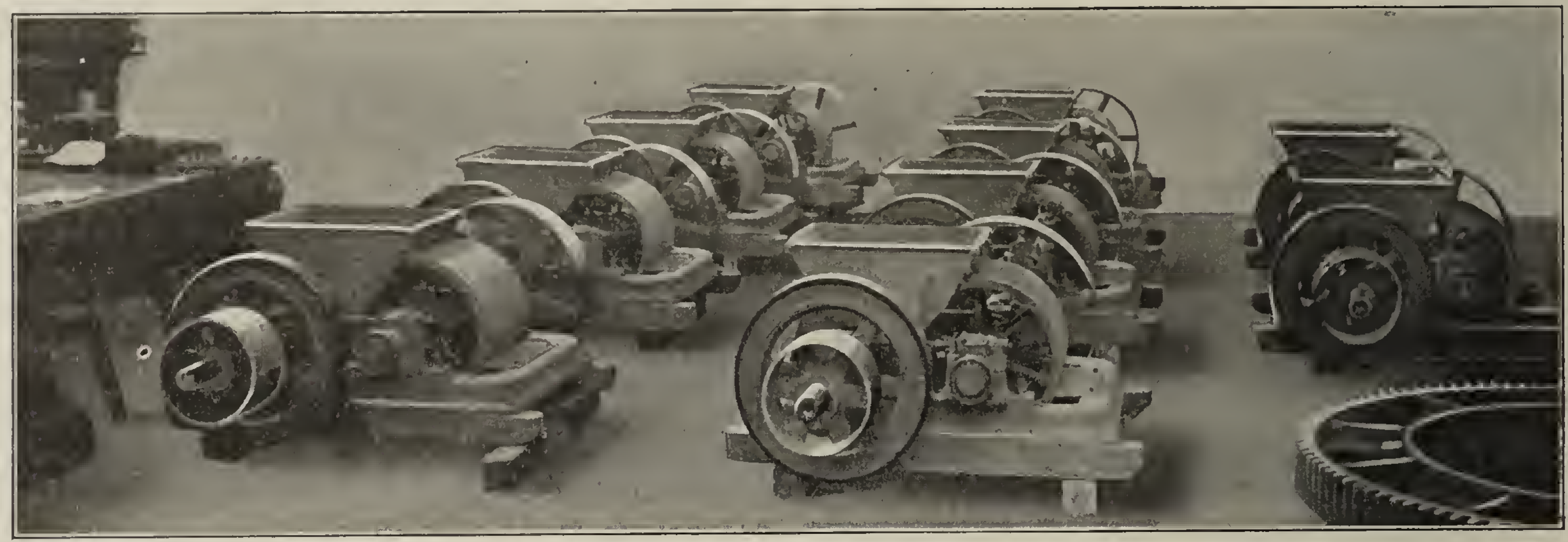


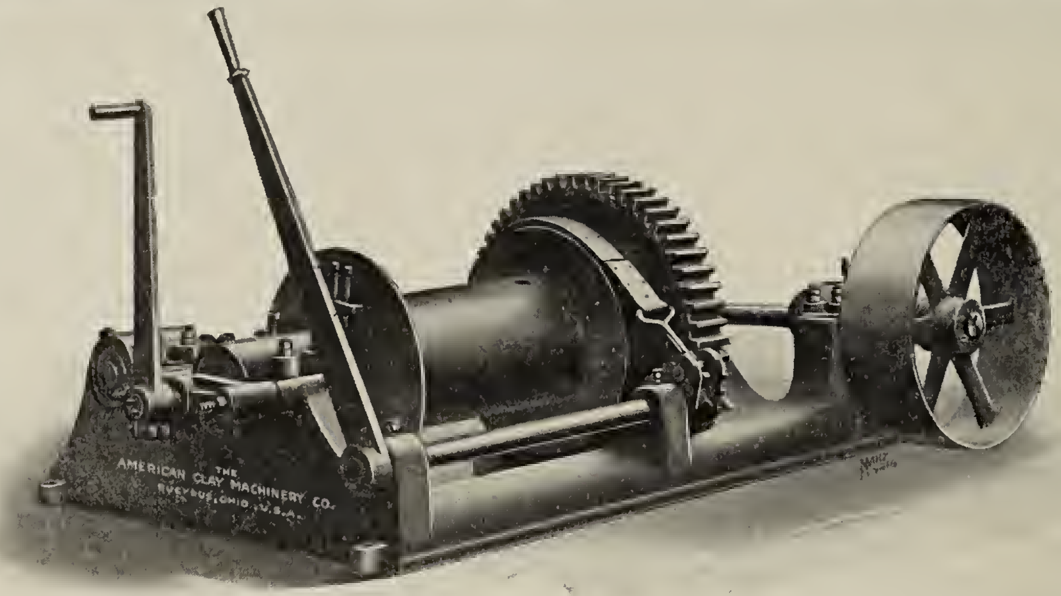
The American Clay Machinery Company

Bucyrus, Ohio

Buy War Stamps, the Little Fighters of a Big War

Buy War Stamps, the Little Fighters of a Big War





The above photo shows a view of our Disintegrator floor. We build these disintegrators in groups.

Let us send you specifications on disintegrators.

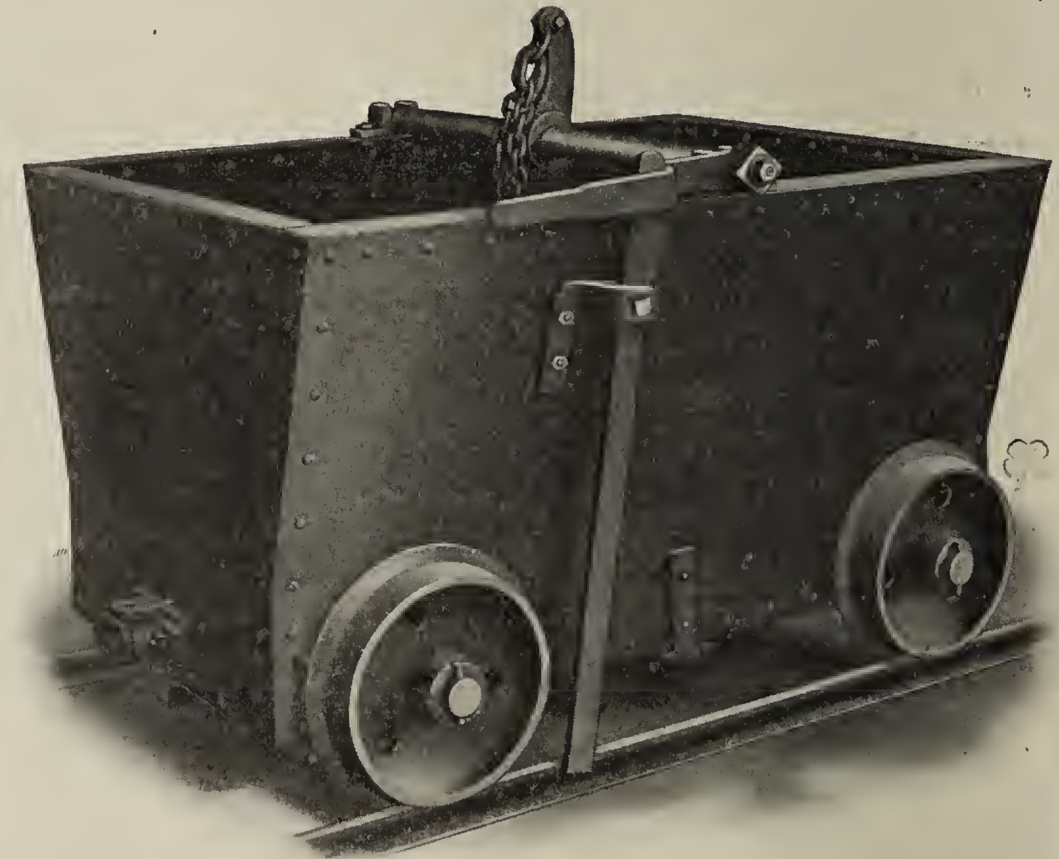
Our Winding drum line is complete and "replete" with the drum you need in your plant.

These drums are designed and made in a way to meet every emergency. A catalog for the asking.

Our Dump car line includes steel and wood cars, each built substantially. We build cars with and without brakes. Ask for our car circular.

The American Clay Machinery Company

Bucyrus, Ohio



Buy War Stamps, the Little Fighters of a Big War

SAY I SAW IT IN BRICK AND CLAY RECORD

Trade Names Now in Use

on Face Brick and Other Clay Products

The purpose of this directory is twofold; it serves to prevent a manufacturer from adopting a trade-name that is already in use—and it also helps manufacturers who use it to establish priority of claim to a name.

Algonquin—Alliance (O.) Brick Co.
Armor—Greenpoint Fire Brick Co., Brooklyn, N. Y.
Artistico—Capital Clay Co., Des Moines, Ia.
Artorique—Yingling-Martin Brick Co., Johnsonburg, Pa.
Athena—Hocking Valley Fire Clay Co., Nelsonville, Ohio.
Beaverclay—Beaver Clay Mfg. Co., New Galilee, Pa.
Belden—The Belden Brick Co., Canton, O.
Bessemer Block—Metropolitan Paving Brick Co., Canton, O.
Bokhara (Hy-tex)—Hydraulic-Press. Bk. Co., St. Louis.
Burlap—Key-James Brick Co., P. O. Alton Park, Tenn.
Caledonian—Fiske & Co., Inc., Boston and New York.
Century Block—Metropolitan Paving Brick Co., Canton, O.
Chaldean (Hy-tex)—Hydraulic-Press. Brick Co., St. Louis and Chicago.
Chinchilla (Hy-tex)—Hydraulic-Press Bk. Co., Indianapolis.
Citadel—Citadel Brick & Paving Block Co., Ltd., Quebec.
Claytex—Walton N. Cable, New York City.
Clayton Missions—Washington Brick, Lime & Sewer Pipe So., Spokane, Wash.
Clayton Velvets—Washington Brick, Lime & Sewer Pipe So., Spokane, Wash.
Cloister—Western Brick Co., Danville, Ill.
Colonial—Capital Clay Co., Des Moines, Ia.
Colonial Reds—Belden Brick Co., Canton, O.
Columclay—Columbia Clay Co., Columbia, S. C.
Cordova (Roofing Tile)—Gladding, McBean & Co., San Francisco and Lincoln, Cal.
Corsweve—Thomas Moulding Brick Co., Chicago, Ill.
Crown—Green Fire Brick Co., A. P., Mexico, Mo.
Denison—Mason City (Ia.) Brick & Tile Co.
Doric—Western Brick Co., Danville, Ill.
De Luxe—The Standard Brick Company, Crawfordsville, Ind.
Egyptian Paving Block—Murphysboro (Ill.) Paving Brick Co.
Embostex—Streator (Ill.) Brick Co.
Empire—Green Fire Brick Co., A. P., Mexico Mo.
Empire—Western Brick Co., Danville, Ill.
Everhard Antique—Everhard Co., Massillon O.
Everhard Double-texture—Everhard Co., Massillon, O.
Everhard Fern-leaf—Everhard Co., Massillon, Ohio.
Everlasting—Mason City (Ia.) Brick & Tile Co.
Fallston Iron Spots—Fallston Fire Clay Co., Pittsburgh, Pa.
Fallston Weavetex—Fallston Fire Clay Co., Pittsburgh, Pa.
Fisklock—Fiske & Co., Inc., Boston and New York.
Ful-tone—Fultonham-Texture Brick Co., East Fultonham, Ohio.
Fultonham-Texture—Fultonham-Texture Brick Co., East Fultonham, Ohio.
Gothic—Western Brick Co., Danville, Ill.
Greendales—Hocking Valley Pro. Co., Columbus, O.
Greendale Red Rugs—Hocking Valley Pro. Co., Columbus, O.
Greendale Rugs—Hocking Valley Pro. Co., Columbus, O.
Grid—Fiske & Co., Inc., Boston and New York.
Hawk-I-Tex—Capital Clay Co., Des Moines, Ia.
Hi-Grade — Southwest Building Supply Co., Springfield, Mo.
Hocking Block—Hocking Valley Brick Co., Columbus, O.
Holland Split—Thomas Moulding Brick Co., Chicago, Ill.
Homespun—Thomas Moulding Brick Co., Chicago, Ill.
Hy-namel—Hydraulic-Press. Brick Company, St. Louis, Mo.
Hy-tex—Hydraulic-Press. Bk. Co., St. Louis, Mo.
Interlocking Tile—Denison Interlocking Tile Corporation, Cleveland, Ohio.
Ironclay—Iron Clay Brick Co., Columbus, O.
Ironstone Block—Terre Haute (Ind.) Vit. Bk. Co.
Loxall—Exner, J. E., Coffeyville, Kan.
Medal Block—Medal Paving Brick Co., Cleveland, Ohio.
Mexico, Mo.—Green Fire Brick Co., A. P., Mexico, Mo.
Metropolitan Block—Metropolitan Pav. Brick Co., Canton, O.
Montezuma Red Face—Montezuma (Ind.) Brick Works.
Mosaic—Western Brick Co., Danville, Pa.
Muskogee Rug—Muskogee (Okla.) Vitrified Brick Co.
Navajo—Kansas Buff Brick & Mfg. Co., Buffville, Kan.
Nuvogue—Boone (Ia.) Brick, Tile & Pav. Co.
Old Rose Colonial—Montezuma (Ind.) Brick Works.
Olean Block—Sterling Brick Co., Olean, N. Y.
Persian Split—Thomas Moulding Brick Co., Chicago, Ill.
Poston Knobstone Block—Martinsville (Ind.) Brick Co.
Promenade—Yingling-Martin Brick Co., Johnsonburg, Pa.
Purington Pavers—Purington Pav. Brick Co., Galesburg, Ill.
Red Rock Ruffs—Auburn Shale Brick Co., Gettysburg, Pa.
Reynoldsville—The Reynoldsville (Pa.) Brick & Tile Co.
Ruftex—Thomas Moulding Brick Co., Chicago.
Rug—Hocking Valley Pro. Co., Columbus, O.
Rustico (Hy-tex)—Hydraulic-Press. Bk. Co., Davenport, Ia.
Rustique Oriental—Martinsville (Ind.) Bk. Co.
Saraband (Hy-tex)—Hydraulic-Press Bk. Co., St. Louis, Mo.
Shale-Tex—Streator (Ill.) Brick Co.
Sheffield—Sheffield Brick & Tile Co. and Sheffield Tile Co., Sheffield, Iowa.
Shirvan (Hy-tex)—Hydraulic-Press. Bk. Co., Cleveland, O.
Sil-O-Cel—Celite Products Co., New York City.
Special—Green Fire Brick Co., A. P., Mexico, Mo.
Speedway Block—Alliance (O.) Clay Prod. Co.
Standard—Green Fire Brick Co., A. P., Mexico, Mo.
Stranger Reds—The Reynoldsville (Pa.) Brick & Tile Co.
Star Fire Brick—Star Clay Products Co., San Antonio, Tex.
Star Fire Proof Hollow Building Tile—Star Clay Products Co., San Antonio, Tex.
Sykesville—The Reynoldsville (Pa.) Brick & Tile Co.
Tapestry—Fiske & Co., Inc., Boston and New York.
Tavern Brick—Metropolitan Pav. Brick Co., Canton, O.
Telco—Terra Cotta Lumber Co., P. O. Emmaton, Cal.
Textur—Thomas Moulding Brick Co., Chicago, Ill.
Tiffany—Thomas Moulding Brick Co., Chicago.
Tiger Shale—Belden Brick Co., Canton, O.
Toronto—Toronto Fire Clay Co., Toronto, O.
Turkestan—Beaver Clay Mfg. Co., New Galilee, Pa.
Turko—Rochester (Pa.) Clay Products Co.
U-Tex—Fultonham-Texture Brick Co., East Fultonham, Ohio.
Velour (Hy-tex)—Hydraulic-Press. Brick Co., St. Louis and Chicago
Vertex—Beaver Clay Mfg. Co., New Galilee, Pa.
Vitri-Craft—Schuylkill Valley Vitrified Products Co., Oaks, Montgomery Co., Pa.
Volcanic—Beaver Clay Mfg. Co., New Galilee, Pa.
Wire-Cut Lug Brick—Dunn Wire-Cut Lug Brick Co., Conneaut, Ohio

Barr Paving Blocks
Repressed and Wire-Cut-Lug
Colonial Face Brick and Blocks
Barrtexture Face Brick
THE BARR CLAY CO.
STREATOR, ILL.

NATIONAL PAVING BRICK MANUFACTURERS ASSN. NPBMA Pave with Brick

ALLIANCE MULTI-COLOR BRICK

Excel all other brick as to texture and beauty of coloring. The chromatic scale of colors runs through the beautiful Rough-texture faces of these brick, most of the brick showing three or four or more of the seven primary colors. One of the most popular sellers in America today.

Mr. Agent, this brick will get you business. Write for samples.

The Alliance Brick Co., Alliance, Ohio

Murphysboro Paving Brick Co.
Manufacturers of
The Celebrated Egyptian Paving Block
The Block That Stands the Test
Prices and samples furnished upon application
MURPHYSBORO, - - - ILLINOIS
ALSO DUNN WIRE-CUT-LUG BRICK

L. D. BINYON President H. L. MATZ Vice-President JAS. A. HOGAN Sec'y and Treas.

S. S. Kimbell Brick Co.

Facing Brick, Mortar Colors, Raggle Blocks

Main Exhibit and General Offices: 304-306 Chamber of Commerce
Branch Exhibit and Sales Room: 738 South Michigan Boulevard
CHICAGO

Ironstone Block

"Often Rattled but Never Embarrassed"
Repressed and Dunn Wire-Cut-Lug

Terre Haute Vitrified Brick Co.
TERRE HAUTE, INDIANA

Hy-tex
The Standard of Quality in Brick

Every texture and color of brick may be found in the Hy-tex line. Send for information to the nearest Branch.

BRANCH OFFICES AND EXHIBIT ROOMS
Baltimore; Chicago; Cleveland; Roseville, O.; Davenport; Dubois, Pa.; Indianapolis; Kansas City; Minneapolis; New York City; Omaha; Philadelphia; Toledo; Washington, D. C.

HYDRAULIC-PRESS BRICK COMPANY
ST. LOUIS

The Danville Brick Company
Manufacturers of
The Unsurpassed Danville Paving Block
DANVILLE, ILL.
Let Us Quote You Prices

NATIONAL PAVING BRICK MANUFACTURERS ASSN. NPBMA Pave with Brick

"NAVAJO" "BROCADE" BRICK

The Kansas Buff Brick & Mfg. Co.
Buffville, Kansas
SALES OFFICES IN ALL PRINCIPAL CITIES

American Clay & Cement Corporation ROCHESTER, N. Y.

Manufacturers of Clay Products

Distributors Face and Ornamental Brick-Masons' Supplies—All Indestructible Building Material

The East Ohio Sewer Pipe Co.
Largest Independent Manufacturers of
Sewer Pipe, Flue Lining, Wall Coping, etc., in the United States
IRONDALE - - - - OHIO

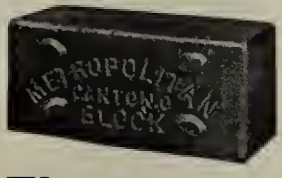
SAY "I SAW IT IN" BRICK AND CLAY RECORD

You will confer a favor upon "Brick and Clay Record" and the advertiser as well, if you say—
"I saw it in Brick and Clay Record"

Hocking Valley Brick Co.
Manufacturers of
Hocking Paving Brick
Repressed and Wire-Cut-Lugs, Dunn Patent
Plants: Logan, O. *General Offices:* Columbus, O.
Output 15,000,000 Annually

The Alliance Clay Product Co.
Manufacturers of the Famous
Speedway Block
Dunn Wire-Cut-Lug-Brick
Also High-Grade Building and Face Brick
ALLIANCE, OHIO
NATIONAL PAVING BRICK MANUFACTURERS ASSN. NPBMA Pave with Brick

Best Paving Brick Made



Daily Capacity
1,000,000
Brick

The Metropolitan Paving Brick Co.
Canton, Ohio

SHAWMUT VITRIFIED
PAVING BRICK WORKS
SHAWMUT, PA. Alfred Yates Gen. Mgr.
Vitrified Shale and Fire Clay
Paving Bricks and Blocks
BURNED IN YATES' PATENT KILN
SAMPLES AND PRICES ON APPLICATION

PURINGTON PAVERS
ARE MADE OF
GALESBURG SHALE
The Purington Paving Brick Co.
Galesburg, Illinois

If You Believe Efficiency is a Factor
in the cost of production, there is no place it will show more than in the life and service of your kilns.
When building new kilns or preparing old ones, why not use material that will give best service, reduce repair bills, extend the life of your kilns, enlarge opportunities for increased output and swell profits?
We make a specialty of high grade fire brick for kiln construction, and special shapes for fire boxes, arches, flues and bottoms.
Consult us before buying.
Ten plants located on the Pennsylvania, New York Central and B. & O. railroads.
Jos. Soisson Fire Brick Company
General and *Sales Offices:* Connellsville, Pa.

We Can Save You Time, Money and Trouble on Fire Brick
BECAUSE OF
Quality, Price and Service
Freight Rates on all R.R.'s in UNITED STATES and CANADA
A Trial Shipment Will Convince You
Write Us
Alsey Brick & Tile Company, Alsey, Ill.

Quality, Service and Price
Three points in favor of the Fire Brick manufactured by the
Cannelton Clay Products Co., of Cannelton, Ind.
Give them a trial. Write today.

Thomas Moulding Brick Co.
High-Grade Fire-Brick and
Special-Fire-Clay-Shapes
Press-Brick Enamel-Brick
Building-Specialties
CHAMBER-OF-COMMERCE BLDG-CHICAGO

A. P. GREEN FIRE BRICK CO.
Plants and General Office: MEXICO, MISSOURI
District Sales Offices: CHICAGO TULSA DES MOINES ST. LOUIS HOUSTON
High Grade Fire Brick
They Last Longer
Special Shapes of all Designs

Fire Brick and Fire Clays
Manufacturers of
High Grade Fire Brick and Ground Fire Clays
Prompt Shipments
THE CAMERON CLAY PRODUCTS CO.
EMPORIUM, PA.

FIRE BRICK
DOVER FIRE BRICK CO.
Incorporated 1870
— MANUFACTURERS OF —
Dover and Buckeye Fire Brick
Unexcelled for kiln purposes
509 CUYAHOGA BLDG. CLEVELAND, OHIO

St. Louis Vitrified & Fire Brick Co.
Manufacturers of
Fire Brick, Zinc Furnace Lining, Cupola Blocks, Locomotive Linings, Patent Lime Kiln Blocks
AND FIRE CLAY GOODS OF ALL DESCRIPTIONS
Office, 306 Wainwright Bldg. ST. LOUIS, MO.

Brick and Clay Record Buyers' Directory of Manufacturers of Machinery, Equipment and Supplies

See Table of Contents Page for Advertisers Directory

Aerial Tramways.
Broderick & Bascom Rope Co.

Appraisal
Rau Appraisal Co., Inc.

Automobile Trucks.
Federal Motor Truck Co.
Kissel Motor Car Co
Selden Truck Sales Co.

Babbitt Metal.
Toronto Fdry. & Mach. Co.

Barium Carbonate.
Rollin Chemical Co.
Roessler & Hasslacher Chem. Co.

Barrows and Trucks.
American Clay Machinery Co.
Bonnot Co.
Chambers Bros. Co.
Chase Fdry. & Mfg. Co.
Fate Co., The J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.
Toronto Fdry. & Mach. Co.
Weller Mfg. Co.

Barytes, Carbonate of.
Roessler Hasslacher Chem. Co.
Rollin Chemical Co.

Belting.
Carpenter & Co., Geo. B.
Gandy Belting Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Main Belting Co.
Sawyer Belting Co.
Scandinavia Belting Co.
Stanley Belting Co
Victor Balata & Textile Belting Co.

Belt Conveyors.
Barber-Greene Co.
Gandy Belting Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
International Clay Machinery Co.
Link-Belt Company.
Manufacturers Equipment Co.
Morse Chain Co.
Scandinavia Belting Co.
Stanley Belting Co.
Victor Balata & Textile Belting Co.
Weller Mfg. Co.

Belt Dressing.
Victor Balata & Textile Belting Co.

Belt Fasteners.
Crescent Belt Fastener Co.
Flexible Steel Lacing Co.
Victor Balata & Textile Belting Co.

Boilers.
(See Engines and Boilers.)

Brick Conveyors.
Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Link-Belt Company
Manufacturers Equipment Co.
Mathews Gravity Carrier Co.

Brick Handling Machinery.
Mathews Gravity Carrier Co.

Brick Machines.
(See "Dry Press," "Stiff-Mud" and "Soft-Mud.")

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Broderick & Bascom Rope Co.

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Chase Fdry. & Mfg. Co.
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International Clay Machy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Orenstein-Arthur Koppel Co.
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Toronto Fdry. & Machine Co.
Trautwein Dryer & Eng. Co.
Watt Mining Car Wheel Co.
Weller Mfg. Co.

Car Movers.
Marion Mach., Fdry. &S . Co.

Castings.
American Clay Machy. Co.
Bonnot Co.
Chambers Bros. Co.
International Clay Mchy. Co.
Link-Belt Company.
Manufacturers Equipment Co.
Toronto Fdry. & Mach. Co.

Chain.
Link-Belt Company.
Morse Chain Co.
Union Chain & Mfg. Co.

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American Clay Machy. Co.
Bonnot Company.
Fate Co., The J. D.
Chambers Bros. Co.
Freese & Co., E. M.
International Clay Machinery Co.
Manufacturers Equipment Co.
Marion Mach., Fdry. Sup. Co.
Steele & Sons, J. C.

Clay Gatherers.
Eagle Iron Works.
Sauerman Bros.
Schofield-Burkett Cons. Co.

Clocks.
Hardinge Bros., Inc.

Clutches.
Hill Clutch Co.
International Clay Mchy. Co.
Link-Belt Company.

Coloring.
Williams & Co., C. K.

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(See Elevators and Conveyors.)

Crushers and Pulverizers.
American Clay Machy. Co.
American Pulverizer Co.
Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
K-B Pulverizer Co.
Manufacturers Equipment Co.
Toronto Fdry. & Mach. Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Marion M., Fdry. & S. Co.
Steele & Sons, J. C.

Cutting Wires.
Manufacturers Equipment Co.

Dies.
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Bonnot Co.
Chambers Bros. Co.
Fate, J. D., Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Toronto Fdry. & Mach. Co.
Weller Mfg. Co.

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Buckeye Traction Ditcher Co.

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American Clay Machy. Co.
Ball Engine Co.
Keystone Driller Co.
Link-Belt Company
Osgood Company
Sauerman Bros.
Schofield-Burkett Cons. Co.
Thew Automatic Shovel Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equip. Co.
Marion M., Fdry. & Sup. Co.

Ditching Machines.
Buckeye Traction Ditcher Co.

Drills.
Keystone Driller Co.
Sanderson-Cyclone Drill Co.

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American Clay Machy. Co.
Bonnot Co.
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International Clay Machy. Co.
Jackson & Church Co.
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Manufacturers Equipment Co.
Smith Co., Claude.
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Standard Dry Kiln Co.
Steele & Sons, J. C.
Trautwein Dryer & Eng Co

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Bonnot Company.
Fate Co., J. D.
Jackson & Church Co.

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Bonnot Co
Chambers Bros. Co.
Eagle Iron Works.
Fate Co., J. D.
Freese & Co., E. M.
Jackson & Church Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Toronto Fdry. & Mach. Co.

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International Clay Mchy. Co.

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Lincoln Electric Co.
Westinghouse El. & Mfg. Co.

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Orenstein-Arthur Koppel Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
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International Clay Mchy. Co.
Link-Belt Company.
Main Belting Co.
Manufacturers Equipment Co.
Mathews Gravity Carrier Co.
Toronto Fdry. & Mach. Co.
Weller Mfg. Co.

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Ball Engine Co.
Bonnot Co.
Freese & Co., E. M.
Jackson & Church Co.
Manufacturers Equipment Co.

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Ball Engine Co.
Keystone Driller Co.
Link-Belt Company.
Sauerman Bros.
Schofield-Burkett Cons. Co.
Thew Automatic Shovel Co.

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Du Pont Powder Co.

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Bonnot Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Trautwein Dryer & Eng. Co.

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Canton Grate Co.
Freese & Co., E. M.
Jackson & Church Co.

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Baird Machine & Mfg. Co.
Bonnot Co.
International Clay Mchy. Co

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Alsey Brick & Tile Co.
Cameron Clay Products Co.
Cannelton Clay Products Co.
Dover Fire Brick Co.
Green Fire Brick Co.
Thomas Moulding Brick Co.
Jos. Soissons Fire Brick Co.
St. Louis Vit. & Fire Brick Co.

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Baird Machine & Mfg. Co.

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Marion Mach. Fy. & Sup. Co.

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Orenstein-Arthur Koppel Co.
Toronto Fdry. & Mach. Co.

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International Clay Mchy. Co.
Wood & Co., R. D.

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Baird Machine & Mfg. Co.
General Electric Co.,
Link-Belt Company.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Steele & Sons, J. C.
Toronto Fdry. & Mach. Co.
Wallace Mfg. Co.

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Cyclone Grate-Bar Co.
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Jackson & Church Co.
Manufacturers Equipment Co.
Marion Mach., Fdry. & S. Co.
Smith Co., Claude.
Toronto Fdry. & Mach. Co.

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Mathews Gravity Carrier Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
International Clay Mchy. Co.
Link-Belt Company.
Manufacturers Equipment Co.
Weller Mfg. Co.

Hollow Brick Machinery.
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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Steele & Sons, J. C.

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Goodyear Tire & Rubber Co.

Hydrometers or Moisture Indicators.
Taylor Instrum't Companies.

Insulating Brick and Powder.
Armstrong Cork & Insulation Co.
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American Clay Machy. Co.
Bonnot Co.
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International Clay Machy. Co.
Manufacturers Equipment Co.
Smith Co., Claude.
Webster & Kincaid.

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Lakewood Engineering Co.
Manufacturers Equipment Co.
Smith Co., Claude.

Locomotives.
Fate Co., J. D.
General Electric Co.

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Ohio Filler & Shield Co.

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Roessler & Hasslacher Chemical Co.

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Williams & Co., C. K.

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Baird Machine & Mfg. Co.
Bonnot Co.
Manufacturers Equipment Co.

Mold Sanders.
American Clay Machy. Co.
Bonnot Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.

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General Electric Co.
Lincoln Electric Co.
Westinghouse El. & Mfg. Co.

Motor Trucks.
Federal Motor Truck Co.
Kissel Motor Car Co
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Weller Mfg. Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co
Jackson & Church.
Manufacturers Equipment Co
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Stevenson Company.

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Ohio Galvanizing & Mfg. Co

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Bonnot Co.
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Bonnot Co.
Jackson & Church Co.
Link-Belt Company.
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Link-Belt Company.
Morse Chain Co.

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Freese & Co., E. M.
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Manufacturers Equipment Co
Steele & Sons, J. C
Toronto Fdry. & Mach Co.

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(See Crushers).

Pyrometers.
Beighlee Instrument Co.
Bristol Co.
Brown Instrument Co.
Engelhard, Chas.
Price Electric Co.
Taylor Instrument Companies
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Trautwein Dryer & Eng. Co.

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Lakewood Engineering Co.
Orenstein-Arthur Koppel Co.

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Bonnot Co.
Freese & Co., E. M.
Manufacturers Equipment Co.

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Brown Instrument Co.
Price Electric Co.

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Freese & Co., E. M.
International Clay Mchy. Co.
Lakewood Engineering Co.
Steele & Sons, J. C.

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Bonnot Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.

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Jackson & Church Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.

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Schofield-Burkett Cons. Co
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Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
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Hendrick Mfg. Co.
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Lakewood Engineering Co.
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Schofield-Burkett Cons. Co.
Weller Mfg. Co.

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Bonnot Co.
Manufacturers Equipment Co
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Toronto Fdry. & Mach. Co.

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Osgood Co.

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Chambers Bros. Co.
International Clay Mchy. Co.
Manufacturers Equipment Co.

Stiff Mud Brick Machines.
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Bonnot Co.
Chambers Bros. Co.
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Freese & Co., E. M.
International Clay Machy. Co.
Steele & Sons, J. C.

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Ohio Galvanizing & Mfg. Co.

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Bonnot Co.
Chambers Bros. Co.
Freese & Co., E. M.
International Clay Mchy. Co.
Lakewood Engineering Co.
Manufacturers Equipment Co.
Steele & Sons, J. C
Toronto Fdry. & Mach. Co.
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Bristol Co.
Brown Instrument Co.
Engelhard, Chas.
Price Electric Co.
Manufacturers Equipment Co.
Taylor Instrum't Companies.
Thwing Instrument Co.

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Bonnot Co.
Chambers Bros. Co.
Fate Co., J. D.
Freese & Co., E. M.
International Clay Mchy. Co.
Manufacturers Equipment Co.
Steele & Sons, J C
Toronto Fdry. & Mach. Co.

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Goodyear Tire & Rubber Co.

Trailers
Fruehauf Trailer Co.

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Kissel Motor Car Co.
Selden Truck Sales Co.

Tubing.
Goodyear Tire & Rubber Co.

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Lakewood Eng. Co.
Orenstein-Arthur Koppel Co
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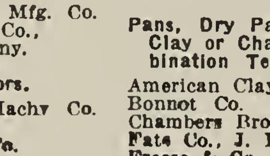
Goodyear Tire & Rubber Co

Watchman's Clocks.
Hardinge Bros., Inc.

Wire Rope.
Broderick & Bascom Rope Co
Manufacturers Equipment Co



We Always Work With An Open Mind

Most people are prone to instantly condemn anything new simply because it is different. They say "it won't work—it can't be done."

We have never worked that way at any time in the many years we have been making brick and tile and building plants.

We have often sat and watched kiln and dryer operations — we have admired the efficient work they were doing. We have been able to appreciate how far advanced they were over other methods that had previously been used. We have never scoffed at any operations.

And—always have we sat there and studied these same kilns and dryers with an "open mind"—planning some method of our own that would be more advanced and economical than anything yet produced.

We are not theorists—we are practical brick and tile men—have spent all our working life around the kilns.

We have an organization that has done some very fine work—we are working out certain plans now that we know will interest you. We want to get acquainted with you and your needs.

CLAUDE SMITH

Engineering Service

MASON CITY, IOWA

THE CHASE DRYER CARS

With patented flexible and reversible boxing and roller bearings

The *Best Equipment* is the Equipment that gives you the *Best Service*

The Chase Fdry. & Mfg. Company
Columbus, Ohio

We will be glad to send samples

Perforated Metal Screens

for

Clay - Cement - Gravel
Stone, etc.

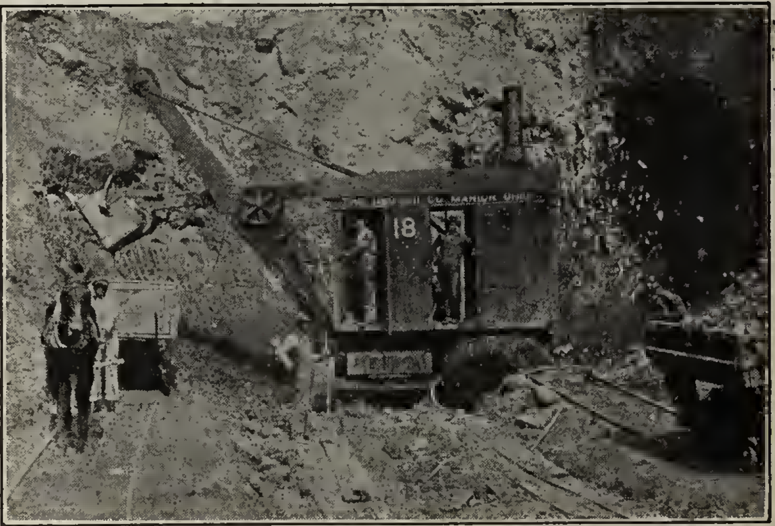
Prompt Shipments

HENDRICK MFG. CO.,
Carbondale, Pa.

You will do better with an OSGOOD

The OSGOOD "18," ¾ yard Traction Revolving Shovel will mix the different stratas of your supply material with every lift of the dipper. It will enable you to get the material quicker, better and at much less expense.
We shall be pleased to give full description and detail information upon application.

THE OSGOOD COMPANY, MARION, OHIO



BELTING

Write for Prices, Discounts and Samples

VICTOR BALATA & TEXTILE BELTING CO.

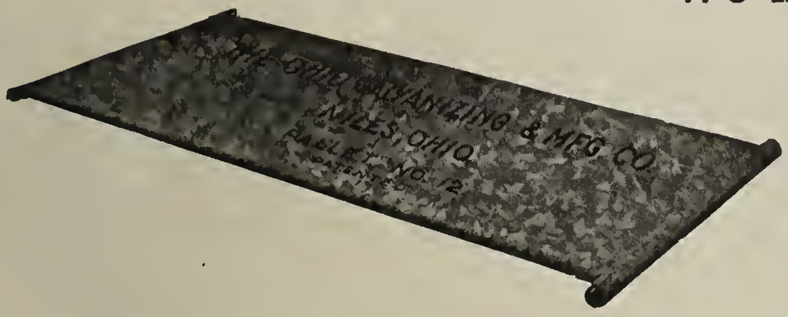
"V-B" (Victor-Balata)
"Ampere"—"White Seal"
(Canvas Stitched)

Main Office: 38 Murray St. New York Factory: Easton, Pa.
Stores: 167 N. Market St. CHICAGO 67 High Street, BOSTON

CONVEYOR BELTS A SPECIALTY

SAY I SAW IT IN BRICK AND CLAY RECORD

Style No. 12



A Time and Money Saver

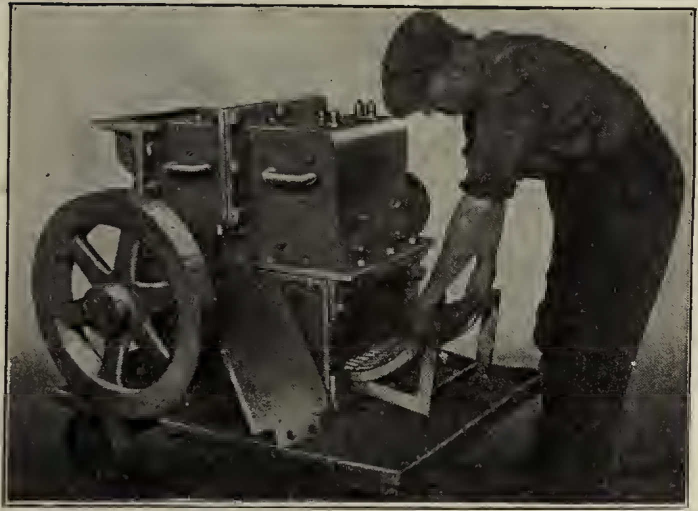
We make a Steel Pallet that is just exactly what your class of work requires

Our line of manufacture covers the entire Steel Pallet field.

No matter what pattern you need. If you require something quite out of the ordinary, so much the better. We can make it right, deliver it promptly and for the least price. Because we are specialists in this particular line.

Simply let us know what you need or send for complete descriptive matter.

The Ohio Galvanizing & Mfg. Co.
Niles, Ohio


Removing Screens From K-B. Pulverizer.

The Initial Cost of the

K-B. PULVERIZER

Covers about all the outlay necessary

It is ALL-STEEL and practically indestructible

No parts but the linings, breaking blocks and hammers *ever can wear out*—and these may be readily replaced.

The K-B is the strongest, safest and sturdiest pulverizer of the hammer-mill type that has yet been designed—*and a remarkably small power user.*

Send for illustrated catalog and references in your vicinity.

K-B. PULVERIZER CO., Inc.
86 Worth Street, New York

K-B PULVERIZER

Two Men Plus One Excavator Equal Twenty Men

But you must be sure it is the **right** Excavator. The Schofield-Burkett Drag-Line Excavator has performed the seeming miracle, and work that formerly required 20 men is now being done with 2 men and a S-B.

Four hundred yards of clay are produced every 10 hours, at this particular plant, and in other instances the cost of digging has been reduced from $10.00 or more per hundred yards of clay to an average of $3.76.

You must save man power now, and no matter what the conditions or nature of your pit the Schofield-Burkett Drag-Line Excavator will dig the clay with fewer men, and at a lower cost.

Because of the flat open-sided constructions of the bucket, soft, plastic clay is dug without trouble. And, on the other hand, the excavator will dig the toughest clay or most obstinate shale that any other type of machine will handle—and do it cheaper.

Write us about your conditions so we can tell you what the S-B Excavator can save for you in money and man-power.

SCHOFIELD-BURKETT CONSTRUCTION COMPANY - Macon, Ga.

We expect no settlement for equipment installed until our written guarantee of certain definite results is fulfilled

Chambers Brothers Company

Fifty-Second and Media Sts.,
PHILADELPHIA, PA.

Brick Making Machinery

Clay Grinding and Mixing Machines
Represses, Dry Pans and Conveyors

For Builders :-: Street Pavers :-: Fire Bricks

CAREFUL ATTENTION TO ORDERS FOR EXPORT

These Electric Trucks Keep Your Product Moving

The serious labor shortage in the brick and clay industry may be met, to a great extent, by the installation of "man power" saving machinery.

This Lakewood-Galion Electric Truck, for example, will keep your product moving from kiln to car. It eliminates the labor of several men, reduces handling charges, increases capacity of output and generally speeds up operations.

"Drive all four—Steer all four" insures maximum driving power and facility in turning.

Complete Haulage Systems—Storage Battery Tractors—Trucks—Trailers—Electric Locomotives—Cars—Track

Link up with Lakewood

LAKEWOOD BUILT TO LAST

Lakewood Engineering Co., Cleveland
FACTORIES
LAKEWOOD GALION CHICAGO HEIGHTS WEST PARK MILWAUKEE ELYRIA

Export Department
ALLIED ALLIED CONSTRUCTION MACHINERY CORPORATION ALLIED
120 Broadway New York, U.S.A.

Continuous Down Draft and Continuous Muffle Kilns.....Webster's

Two new inventions in the kiln world that will undoubtedly revolutionize the burning of clay ware. In these kilns, there is incorporated every known device and method of burning, and all can be used in the usual order of burning or at the proper time during emergencies.

Any heat desired may be obtained, or any cooling speed or heating speed used depending entirely on your clay and what it will stand; in addition to this flexibility the kiln may be burned either continuously or as a periodical kiln. It may be applied to some continuous kilns already built, but all down draft kilns must be rebuilt.

We shall be glad to meet any person or persons interested, and will produce plans and discuss every feature of the new kilns by appointment

WEBSTER AND KINCAID 407 GREENWOOD BUILDING
CINCINNATI, OHIO

DU PONT AMERICAN INDUSTRIES

Learn About Du Pont Products

to get acquainted with a reliable source of supply, simplify selection and to be sure of getting material ordered

The Best for the Purpose

To the making of all Du Pont Products is applied the same integrity of purpose, adherence to standards, and maintenance of quality as have made Du Pont Explosives the standards.

Determine your choice of supplies by learning what Du Pont American Industries make to meet your exacting requirements.

Learn about Du Pont Products,—mark and mail the coupon.

Note: When in Atlantic City, visit Du Pont Products Store, Boardwalk and Penna. Ave., and the Shooting School on Ocean End of Young's Million Dollar Pier.

E. I. du Pont de Nemours & Co.
Powder Makers Since 1802 Wilmington, Delaware

The Dupont American Industries Are:

E. I. du Pont de Nemours & Co., Wilmington, Del., Explosives.
Du Pont Chemical Works, New York, Pyroxylin and Coal Tar Chemicals.
Du Pont Fabrikoid Co., Wilmington, Del., Leather Substitutes.
The Arlington Works, 725 Broadway, New York, Ivory Py-ra-lin and Cleanable Collars.
Harrison Works, Phila., Pa., Paints, Pigments, Acids, Chemicals.
Du Pont Dye Works, Wilmington, Del., Dyes and Dye Bases.

MAIL THIS COUPON
Marking X Before Subject of Interest, to
E. I. du Pont de Nemours & Co.
Adv. Div. (E. I. 419) Wilmington, Del.

☐Blasting Supplies
☐Blasting Powders
☐Industrial Explosives
☐Sporting Powders
☐Trapshooting
☐Hunting
☐Harrison Paints
☐Vitrolac Varnish
☐Flowkote Enamel
☐Auto Finishes
☐Sanitary Wall Finish
☐Antoxide Iron Paint
☐Bridgeport Wood Finish
☐Metal Lacquers
☐Pigment Bases
☐FABRIKOID—Motor
☐ " Craftsman
☐ " Book-Finish
☐ " Truck Special
☐ " Marine Special
☐Fairfield Rubber Cloth
☐PY-RA-LIN Specialties
☐ " Toilet Goods
☐ " Sheeting
☐Challenge Collars
☐Commercial Acids
☐Ethers
☐Bronze Powders
☐Soluble Cotton
☐PONTOKLENE
☐Tar Distillates

NAME ....
PLACE ....
BUSINESS ....

DU PONT

THE
ELECTROMOBILE
TRADE MARK
INDUSTRIAL TRUCK

KOPPEL

Electromobile Trucks, Tractors and Trailers and Industrial Railways

Wherever man power can be displaced by mechanical transportation Koppel Equipment is the thing you need and should have.

Write our Engineering Department for money-saving suggestions on Industrial Transportation devices.

SALES OFFICES
New York
Pittsburgh
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Representatives
Koppel Sales Co., Inc.,
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ORENSTEIN-ARTHUR KOPPEL CO.

Southwestern Distributors:
Electromobile Co., St. Louis, Mo.

**PLANT:
KOPPEL,
PA.**

THE RELIABLE BELTING FOR BETTER SERVICE

Despite unfavorable working conditions and hard usage—

TRADE **SAWYER** MARK
Registered
Stitched Canvas Belting

has gained the reputation of being the most reliable belting among workers in brick and clay plants.

The high quality and satisfactory service are backed by the seal of the largest rubber manufacturer.

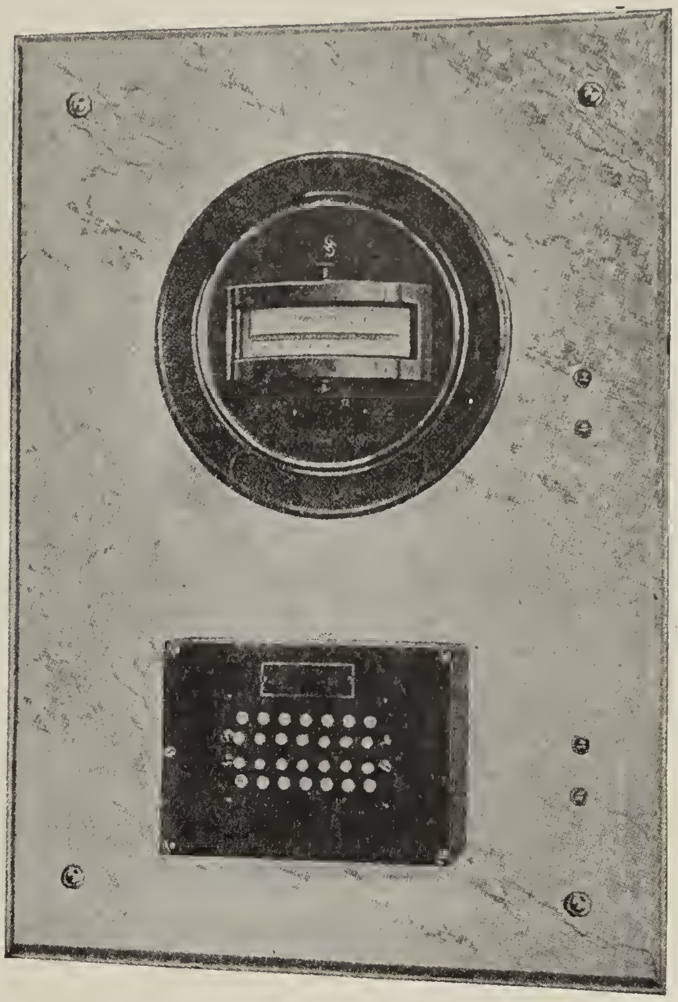
You want the best, therefore, specify SAWYER when you next consider your belting needs.

UNITED STATES RUBBER COMPANY
Mechanical Goods Division
NEW YORK

Pyrometers

that are cheaper in the end—

It is not what a pyrometer costs, but what it ultimately *does,* that determines its real cost value.



Heraeus Le Chatelier
The Ultimate Pyrometers

more than pay for themselves in service given. Heraeus Thermo-Couples are of exceptional purity, register accurately at all times and are strictly interchangeable.

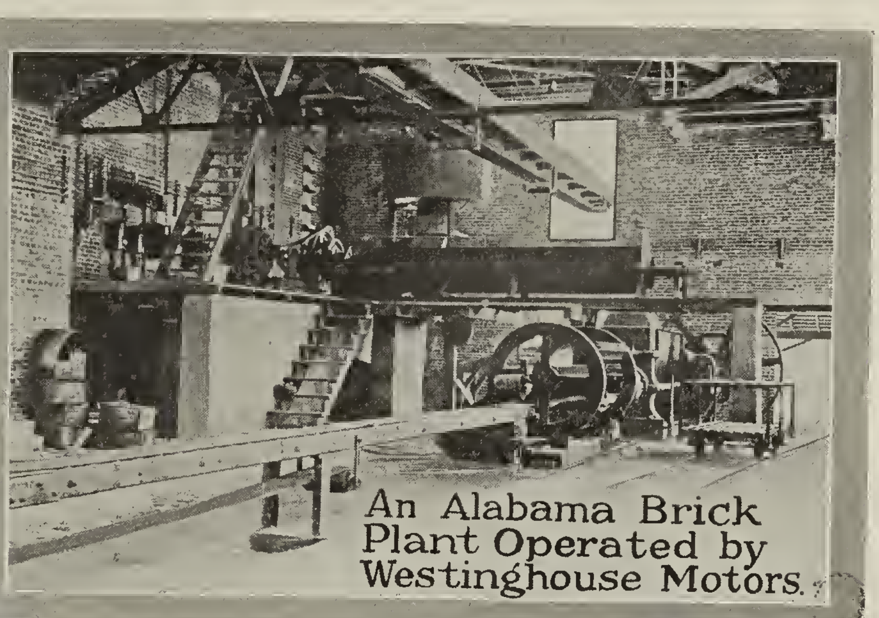
Catalogue "P" will save you money. Write for it.

Charles Engelhard
30 Church Street New York

Why Be Forced To a Better Thing?

Why wait till the pressure of war requirements shows you that you are lagging behind — that the power equipment you once thought good enough, is now slow and wasteful of power—right at the time you should be doing your utmost to speed up and to save power?

Why not profit from the experience of others?



An Alabama Brick Plant Operated by Westinghouse Motors.

Uncle Sam Needs Every Ounce of Efficiency You Can Muster—

Westinghouse has helped many brick manufacturing plants to higher efficiency.

Westinghouse Motor Drive will give you maximum operating economy. This is a proved fact, and one we want to demonstrate to you.

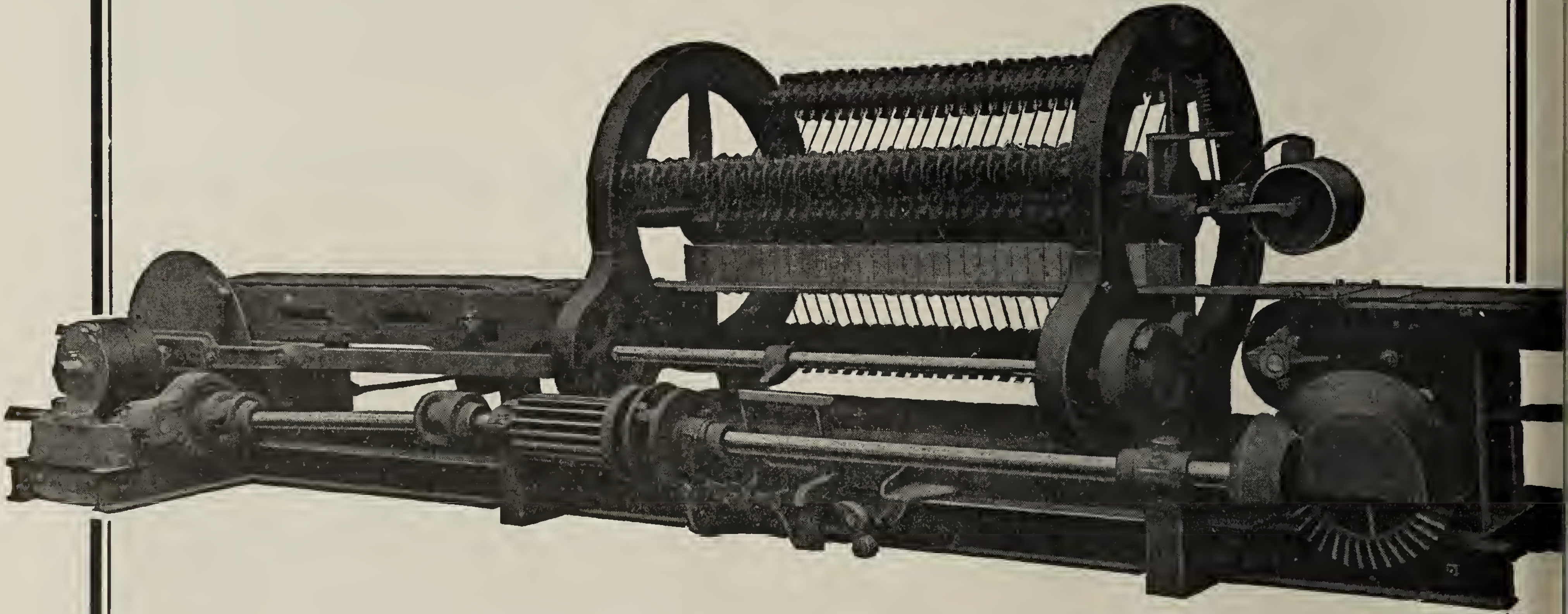
Westinghouse

Westinghouse
Electric &
Mfg. Co.
East Pittsburgh, Pa.

Any Brickmaker May Have a Troubleless Cutter

Any Brickmaker may convince himself—thoroughly—that it is unnecessary to operate a troublesome cutter.

With several hundred Freese Cutters in daily operation, successfully working a great variety of clays and under practically every working condition, it is an easy matter to learn the experiences and opinions of men who use the cutter—and know.



Model C30 Rotating Automatic Cutter

A positive, sure-acting cutter, requiring practically no attention.

E. M. FREESE & COMPANY

GALION, OHIO

Dependable Machinery of Proven Efficiency

SAY "I SAW IT IN BRICK AND CLAY RECORD"

MORSE ROCKER JOINT SILENT CHAIN DRIVES

LARGE POSSIBILITIES OF REDUCED TRANSMISSION COSTS ARE OPEN TO THOSE WHO WILL INVESTIGATE MORSE DRIVES MADE RIGHT, PROVIDE MAXIMUM DURABILITY AND EFFICIENCY.

Positive as Gears. Flexible as a Belt.

Deliver full power and speed and deliver RIGHT ALONG.

THE LARGEST MANUFACTURERS AND STOCK OF SILENT CHAIN DRIVES IN THE WORLD. CONSIDER THE ADVANTAGE OF THIS AND OUR PROMPT DELIVERIES. THESE ARE VITAL FACTORS OF

MORSE ENGINEERING SERVICE

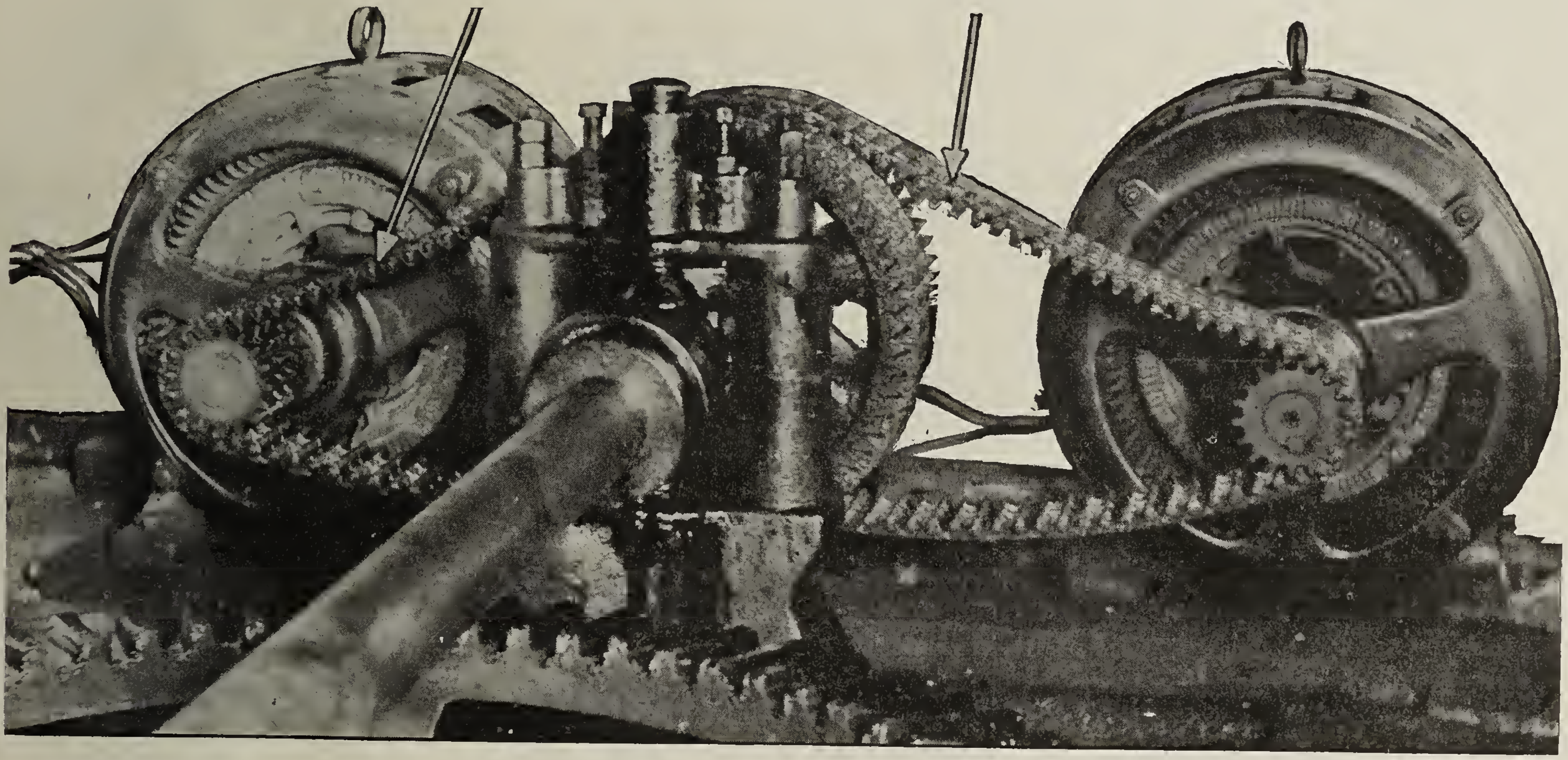
OUR ENGINEERS, SPECIALISTS IN THE ART OF DESIGNING CHAIN DRIVES, ARE CONVENIENTLY LOCATED AT BELOW ADDRESSES, AND WILL GLADLY CALL AT YOUR REQUEST AND ASSIST IN SOLVING ANY POWER TRANSMISSION PROBLEM WITHOUT OBLIGATION.

WE ARE ALWAYS GLAD TO FURNISH SPECIAL INFORMATION AND WELCOME INQUIRIES. FEEL FREE TO WRITE US AT ANY TIME.

The more severe the duty the more need of "MORSE"—the perfect, durable positive transmission, with 99% efficiency

Morse Drives have great mechanical strength, made of the best material available and with the perfection of modern cost manufacturing methods, assuring 100% overloads.

LOSS OF SPEED WITH HIGHER PRODUCTION COSTS AND SHUT DOWNS ARE EXPENSIVE. FAULTY BELT TRANSMISSION IS A BIG COST ITEM.



MORSE CHAIN COMPANY Largest Manufacturers of Silent Chains in the World **ITHACA, N. Y.**

MORSE ENGINEERING SERVICE *Address nearest office* ASSISTANCE WITHOUT OBLIGATION

BOSTON, Mass......141 Milk Street
CHICAGO, Ill......Merchants Loan & Trust Bldg.
CLEVELAND, Ohio......421 Engineers Bldg.
DETROIT, Mich......1003 Woodward Ave.
GREENSBORO, N. C......805 Ashboro St.
NEW YORK CITY...50 Church St., Hudson Term. Bldg.
PITTSBURGH, Pa......Westinghouse Bldg.
SAN FRANCISCO, Cal......Monadnock Bldg.
ATLANTA, Ga...Earl F. Scott, M. E., 702 Candler Bldg.

CANADA......Jones & Glassco, Reg'd.
Montreal, St. Nicholas Bldg. Toronto, Traders' B'k Bldg.
KANSAS CITY, Mo......Morse Engineering Co., R. A. Long Bldg.
MINNEAPOLIS, Minn......Strong-Scott Mfg. Co., 413 Third St., S.
ST. LOUIS, Mo...Morse Engineering Co., Chemical Bldg.
Licensees for Europe..The Westinghouse Brake Co., Ltd. 82 York Road, King's Cross, London, N.

"MORSE" is the Guarantee always behind our Service, Products and Results

SAY "I SAW IT IN BRICK AND CLAY RECORD"

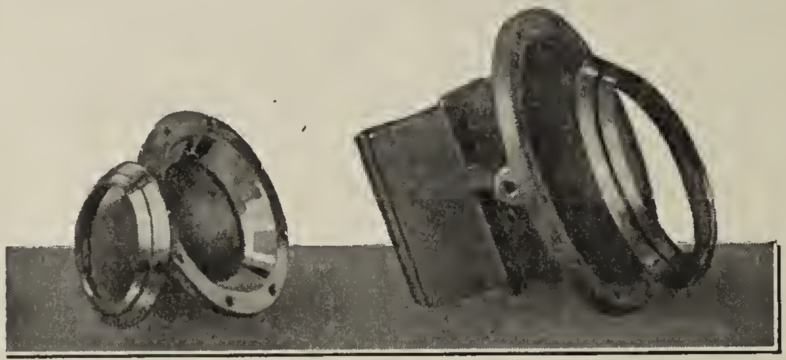
Oil Dies of Improved Type

A SMALL, BUT MOST IMPORTANT PART OF EQUIPMENT

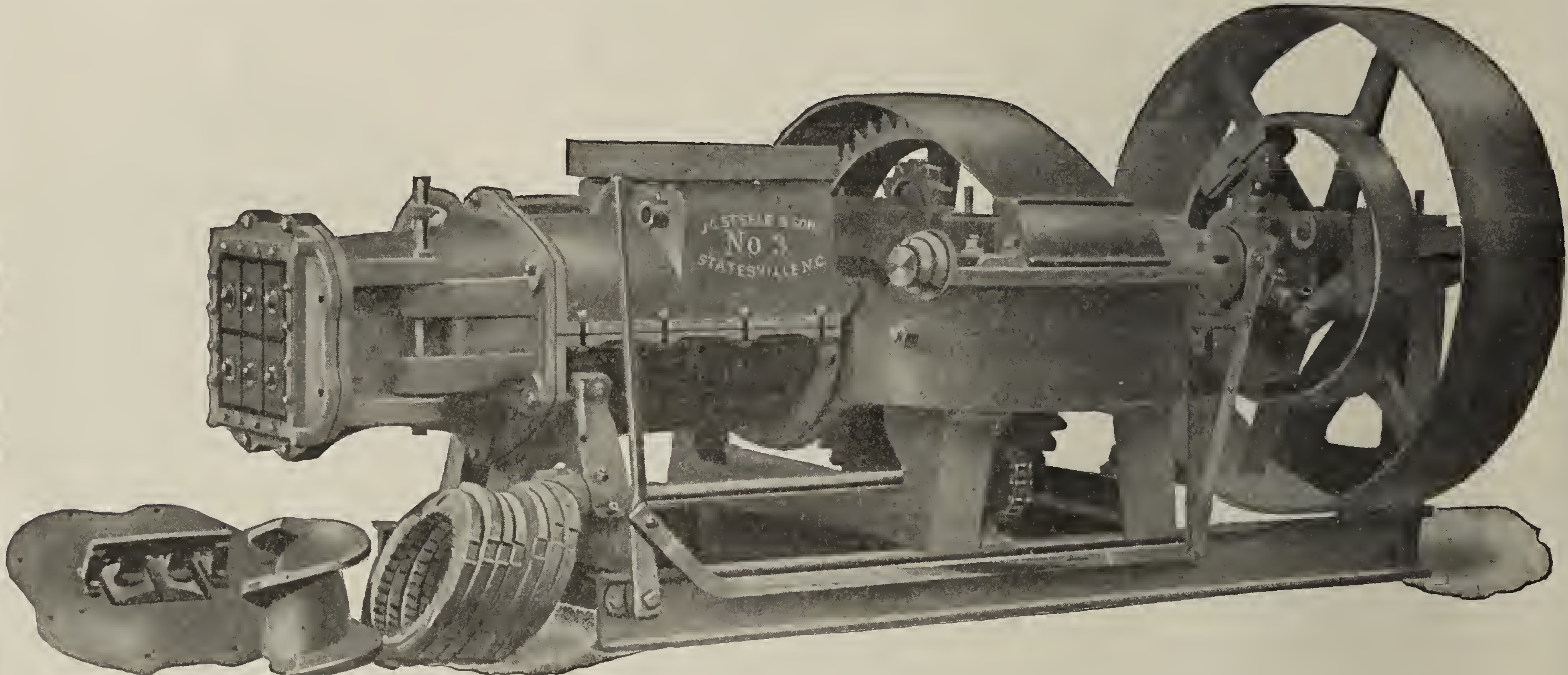
We have developed oil dies, both sidecut and endcut, which have been in use for several years, and are fast replacing other types. Saving of oil will pay for die in very short time.

The distributing rings are chilled and ground, giving an even distribution of oil, lasting as long as die, in most cases.

This eliminates the trouble of fast wearing sheet rings used heretofore. Also the annoyance of oil soaked packing is dispensed with, no packing being used. These dies are fully covered by patents and can be used on any machine. We also furnish oil pump.



Hollow Block and Drain Tile Machines, in Many Sizes



Write for literature descriptive of our most complete line of equipment.

J. C. Steele & Sons, Statesville, N. C.

Western Representative
Geo. H. Smith
1618 East 37th St., Kansas City, Missouri

Northern Agent
The Manufacturers Equipment Co.
Dayton, Ohio

Eastern Agents
Carter Engineering Co.
No. 1 Madison Ave., New York City

Canadian Agents
Perry & Duke
No. 841 College St. Toronto, Ont.

Classified Advertisements

Classified advertisements are inserted at the following rates: First insertion, eight cents per word, the captions "For Sale," "Wanted," and address, to be counted as a part of the ad. Additional insertions, six cents per word per insertion. No advertisement inserted for less than $1.00 per insertion. Cash must accompany all orders to insure insertion.

WANTED—HELP

WANTED—Yard Superintendent thoroly experienced in the manufacture of Hollow Tile and Common Building Brick. Location, South. Want a thoro, capable man of experience, good handler of labor. Give experience and references in first letter. Only reliable parties need apply. Salary to begin with $150.00 per month. Good opportunity for advancement for industrious man. Plant operates entire year. Address: 6-K, care of "Brick and Clay Record." 6-2

WANTED—Burner for terra cotta plant. Must be thoroly competent to take charge of setting and burning enameled, polychrome and standard terra cotta. Answer must state age, experience, salary expected and give references. Address: 6 Burner, care of "Brick and Clay Record." 6-1

WANTED—Foreman for combination hollow ware machine and kiln. Plant output seventy tons a day, located in southern state. Excellent opportunity for the right man. Answer, stating full qualification. Address: 6-W, care of "Brick and Clay Record." 6-2

WANTED—Thoroly experienced man, who is familiar with machinery and can handle men, to act as superintendent of paving brick plant. Address: 6-E, care of "Brick and Clay Record." 6-2

WANTED—Blacksmith and machinist, capable of handling brick yard machinery. Murphysboro Paving Brick Company, Murphysboro, Ill. 6-2

WANTED—POSITIONS.

POSITION as superintendent of fire or face-brick plant by man of 23 years' experience in charge of large and modern plants. Address: 62-E, care of "Brick and Clay Record." 62-1P

WANTED—Position as Superintendent of plant manufacturing clay products. Can furnish A No. 1 references. Age 35. Address: 6-A, care of "Brick and Clay Record." 6-2-P

WANTED—Position as manager or superintendent of brick plant—firebrick, silica or paving brick. Employed but desire change. Address: 62-D, care of "Brick and Clay Record." 62-3-P

WANTED—EQUIPMENT

EQUIPMENT WANTED

One Crusher.
One 9 ft. Dry Pan.
One large Brick Machine.
One large Automatic Cutter.
Two Richardson Represses.

Please give detailed description, condition, location and lowest cash price. Lock Box 727, Uhrichsville, Ohio. 6-TF

WANTED—40 second-hand dryer cars, similar to the American Clay No. 82 dryer car. Must be in good condition. Address: 6-BA, care of "Brick and Clay Record." 6-2-1

WANTED—Five foot wet pan, any make, complete and in good condition. Address: 62-Pan, care of "Brick and Clay Record." 6-2-1

MISCELLANEOUS

BRICK MEN—Help conservation, by manufacturing garbage and waste into high grade fuel. Factory concessions. Culver, Pacific Bldg., Washington, D. C. 6-LP

FOR SALE—SAND-LIME PLANTS

FOR SALE—Sand Brick Plant, dryer, lime grinder, elevators, conveyors, friction gear for pulling cars out of chamber, 18 brick cars, boiler and engine. Manistee Brick Co., Manistee, Mich. 6-TF

FOR SALE—CLAYWORKING PLANTS.

FOR SALE
PLANT OF THE DENVER SHALE BRICK YARDS

20 acres of shale.
3 Boyd presses with dry pans, elevators and clay screens.
3 boilers and engine.
6 kilns.

This plant in operation for past twelve years, and has good steady business. Owner has other interests and cannot give any further attention to brick business. Bargain for some one wanting a good business. The Denver Shale Brick Company, 1441 Seventh St., Denver, Colo. 52-4

FOR SALE—At Cumberland, Md., new plant for manufacturing all grades building brick, also fire brick, fully equipped with latest modern machinery, can operate with either natural gas or coal. Reason for selling, to settle estate. Address: Blaine White, Box No. 482, Cumberland, Md. 6-2

FOR SALE—Tile factory and small elevator. In good grain county. Also do retail coal business. For further particulars address: C. A. Fish, 13 N. Mulberry Street, Troy, Ohio. 62-1

FOR SALE—Plant suitable for manufacturing paving brick, drain tile or hollow ware in Southern Ohio. Plant in good running order and excellent reasons given for selling. Please address: 52-Drain Tile, care of "Brick and Clay Record." 5-2-3

FOR SALE—USED MACHINERY

70-BUCYRUS SHOVEL

One 70-Bucyrus shovel with 2½-yd. dipper. Just rebuilt in locomotive shop.

Perfect Condition

Bargain, $6250

F.o.b. Davenport, Iowa

Machinery Warehouse & Sales Co.
711 Old Colony Bldg., Chicago, Ill.

Rusting away—to a state of uselessness

The machine you discarded for one of larger capacity is still in good condition, lots of wear in it. Are you allowing it to rust out?

Offer it for sale—somebody will be glad to get it, and it will mean that the net cost of your new equipment will be that much less. Good business judgment, isn't it?

Eight cents per word for one insertion, Six cents per word for each additional insertion, in the Classified Department.

BRICK AND CLAY RECORD, 610 Federal Street, CHICAGO, ILL.

Classified Advertisements

RAIL

	Price
200 Tons, 45-lb., with angle bars	$ 57.00
50 Tons, 20-lb., with splice	62.00

PUMPS

	Price Chicago
1—10-in. Morris Sand, belt driven	$ 500.00
1— 8-in. Morris Water, belt driven	300.00
1—20x10x14 Worthington Duplex	600.00

STEAM SHOVELS

	Price Chicago
1—No. 0 Thew on Standard gauge railroad truck, ⅝ yd. dipper	$2,500.00
1—No. 0 Thew Traction with ⅝ yd. dipper, fine condition	4,000.00
1—14 "B" Bucyrus Traction with ⅝ yd. dipper, almost new	4,000.00
1—18 "B" Osgood Traction with ¾ yd. dipper, high boom, one year old	5,000.00
1—No. 1 Vulcan Revolving Shovel, standard gauge, with ¾ yd. dipper, good as new crane	4,500.00
1—Same as above, with 30 ft. boom	5,500.00
1—45-ton Bucyrus, standard gauge, 1¾ yd. dipper	Illinois 6,500.00
1—Model 60 Marion with 2½ yd. dipper	Iowa 7,000.00
1—70-ton Bucyrus, with 2½ yard dipper, good as new	6,000.00

ENGINES

	Price
1—11x16, 60 H. P. Erie Slide Valve Engine, good as new	$ 250.00
1—10x18, Buckeye Automatic, fine condition	350.00
1— 6x10, 15 H. P. Sturtevant Vertical engine	100.00
1—18x42, 150 H. P. Allis Corliss Engine, good as new	1,500.00

These We Own and Can Guarantee and Ship Promptly

1—11x16 Erie Slide Valve, good as new	$ 300.00
1—18x36 Allis-Chalmers Heavy Duty R. H., good as new	2,000.00

These We Own and Can Guarantee and Ship Promptly

HOISTING ENGINES

1—12x14 D. C. D. D. Slackline Cableway engine, new	$2,000.00
1—8¼x10 Lidgerwood D. C. D. D. with boiler	1,600.00

BOILERS

	Price Chicago
1—30 H. P. Vertical boiler	$ 250.00
1—25 H. P. Vertical American Hoist and Derrick	250.00
1—50 H. P. Vertical Butt Strap	750.00
1—40 H. P. Firebox on Steel Truck	550.00
1—60 H. P. Firebox boiler on skids	600.00
1—60 H. P. Vertical Lidgerwood	800.00
1—200 H. P. Erie Water Tube Boiler. 150 lbs	2,000.00

These We Own and Can Guarantee and Ship Promptly

1—200 H. P. Erie Water Tube, Hartford Insurance, at 150 lb. pressure	$2,500.00
2—200 H. P. Marine Boiler, good for 150 lb. pressure, complete, per horsepower	12.00

MOTORS

	Price Chicago
1—20 H. P. Westinghouse, 60 cycle. 3 phase, 220 volt	$ 400.00
1—30 H. P. Westinghouse, 60 cycle, 3 phase, 2,200 volt	450.00
1—35 H. P. Westinghouse, 60 cycle 3 phase, 2,200 volt	500.00
1—50 H. P. General Electric, 60 cycle, 3 phase, 220 volt	750.00

CARS

	Price Chicago
20—4 yd. Western, 2 way, Contractors 36 in. gauge, wooden bodies. Each	$ 125.00
70—2½ yd. steel bodied, end dump quarry cars, 36 in. gauge. Each	Kansas City 80.00
20—12 yd. Western, standard gauge MCB, air dump cars, good condition. Each	Nebraska 900.00
50—1½ yd. Koppel "V" Shaped, 24 in. gauge, steel cars, new. Each	Chicago 120.00

CRUSHERS

	Price Chicago
2—No. 5 Austins, one straight and one angle drive, both fine condition. Each	$1,500.00
1—No. 6 Style "D" Gates, fine condition	2,000.00
1—10x20 Blake Jaw Crusher on skids	New York 800.00
1—9x16 Universal on skids, almost new	Chicago 500.00

These We Own and Can Guarantee and Ship Promptly

2—18x24 Blake Jaw Crushers, very heavy type. Each	$2,000.00

ELEVATOR AND SCREENS

	Price Chicago
1—No. 5 Gates 70 ft. Centers, almost new	$ 700.00
1—No. 7½ Austin 62 ft. Centers, fine condition	900.00
1—No. 9 with 36 in. Buckets, good condition. Price without belt.	900.00
1—48x18 Austin screen with dust jacket	800.00
1—48x20 McCully	900.00

CLAM SHELL BUCKETS

	Price Chicago
1—¾ yd. Owen with teeth, almost new	$ 450.00
1—1½ yd. Heywood, first class	650.00
1—1 yd. Browning	500.00
1—1½ yd. Page Dragline	500.00

CRANES

	Price Chicago
1—7-ton, 4 wheel Vulcan Bucyrus single line crane	$ 6,000.00
1—15-ton Brown Hoist, with 50 ft. boom, 8 wheeled, MCB, with 2 yd. Brown Hoist clam shell	17,500.00

These We Own and Can Guarantee and Ship Promptly

1—15-20 Ton McMyler, 4 wheels with stability wheels on ends of axles, good as new	$13,000.00
1—15-20 Brown hoist, 8 wheeled, MCB, 40 ft. boom, 1½ yd. bucket, fine condition	18,500.00

LOCOMOTIVES

	Price Chicago
1—9x14 Vulcan, 36 in. gauge, saddle tank	$1,250.00
1—10x16 American, 36 in. gauge, saddle tank, good as new	1,850.00
1—9x24 Baldwin, 10 wheels, 60 tons.	8,000.00
1—18x24 American, 10 wheeler	6,000.00
1—17x24 6-wheel Switcher	8,000.00

DRAGLINES

	Price Chicago
1—Monighan Walker Steam Machine, with 50 ft. boom, 1½ yd. bucket, almost new	$7,000.00
1—Flory outfit, Engine 10x12, heavy dragline type boiler, Firebox 150-lb. pressure, boom 60 ft. steel, bucket 2 yd., new 1917	9,000.00
1—24 Bucyrus, with 85 ft. boom	....

MACHINERY WAREHOUSE & SALES COMPANY, *Successors to* **GEO. C. MARSH & CO.**

Telephone Harrison, 5799 **711 Old Colony Bldg., Chicago**

FOR SALE.

All of the brickmaking equipment of the Indiana Brick Company, Anderson, Ind., including:

2 C. & A. Potts Co. soft-mud brick machines with disintegrators.

475 feet of conveyor frame to accommodate 20-inch belt.

900 feet, 5 ply by 20-inch conveyor belt (this item has never had cleats attached and is entirely free from holes).

200 steel rack cars for 24-inch gauge track.

21,000 three-slat wood pallets, 9½ by 33 in.

Single and double transfer tracks.

Turntables.

Sanders.

1 Style B winding drum made by C. & A. Potts Co.

Furnace doors, frames, grates, bars.

1 Justice radiated heat drier.

A large assortment of large and small relaying rails.

Pulleys, belting and shafting.

12,000 feet 1-inch gas pipe.

1 13-ton locomotive made by the American Locomotive Co., Pittsburgh, Pa., for 36-inch gauge track.

A large amount of motors ranging in a variety of sizes.

This plant is now being dismantled and this equipment will be sold at very low prices. If interested, address Moore & Ziegler Machinery Company, Muncie, Ind. 3-TF

GOOD "USED" MACHINERY AND SUPPLIES

One Allis-Chalmers "Blake" model 9 in. x 15 in. jaw crusher. One 24 in. smooth roll crusher. One 20 in. disintegrator. One 10 ft. x 30 in. steel pugmill. One 4-mold Boyd dry press. 50 steel frame, steel deck dryer cars with standards for double decks. 21 Atlas make steel frame double-deck dryer cars. 13 tons 16 lb. full-length, straight relay rails. 78 ft. 13 in. 10-ply Sawyer belting. Lot of different width and lengths of Gandy belting. 12 5 in. x ¼ in. kiln bands with tighteners. 80 10-in. x 5 in. steel elevator buckets. C. H. Horton Co., Painesville, Ohio. 62-1

FOR SALE

2—40 h.p. horizontal tubular steam boilers.
2—Steam pumps.
Large quantity 1-inch steam pipe.
Two clay carts.
Five wagons.
Two wagon water boxes.
One tile machine.
One sewer-pipe press.
100 ft., never used, 12-inch steel pipe.
One 4 ft. x 14 ft. flueless boiler.
Iron bands.
Pulleys.
One, never used, wooden silo.
One, never used, ensilage cutter.
One clay mixer, and other things too numerous to mention.

Edgar M. Heafer & Co., Bloomington, Ill. 52-TF

FOR SALE—Madden auger machine No. 6D, horizontal, also automatic cut-off; good condition. Thos. Phillips, 30 East Frambes Ave., Columbus, Ohio. 3-2TFX

FOR SALE.

1—No. 88 horizontal Brewer brick machine.
1—Wallace pug mill.
1—Drake Standard crusher with conical rolls.
1—Rust clay feeder
1—Winding drum with 500 ft. of cable.
1—Bensing automatic tile cutter with plate for cutting tile from 3 in. up to 8 in. Also equipped with plates for hollow blocks.
About 500 ft. of 1-inch pipe.
1,000 ft. of 12 lb. steel T rails.
About 700 ft. of 16 lb. steel T rails.
1—6 in. fan.
A quantity of pulleys and shaftings, also bunch of Gandy belting.
1—Chain elevator.
1—Repress.
Wheelbarrows and other things too numerous to mention.

R. B. Hinkly, Luverne, Minn. 6-2TF

Horton Upright Soft-Mud Machine
Conical Roll Crusher—both brand new.
Also one 6 ft. Wheel Fan with Engine.
Prices Right.

4-Manufacturer,
Care of "Brick and Clay Record"
610 Federal Street Chicago Ill.

Classified Advertisements

$50,000 Worth of Fine New Full Rolls and Remnants of

CANVAS STITCHED BELTING

Up to 36 Inches Wide in 6, 8, 10 and 12 Ply

AT LESS THAN HALF THE NEW PRICE

Send for No. 18-K Bargain Price List at Once

Teuscher & Son Machinery Supply Co., 527 N. Second Street
ST. LOUIS, MO.

Brick Machinery

8 Dunlap Screens, 4x14 ft.
10 Dunlap Screens, 5½x16 ft.
1 9-ft. Eagle pan, rolls 48x10 in.
1 9x18 Forsyth crusher.
1 hand press.
1 6x74 ft. sand lime, steel cylinder, ⅝ inch butt strapped with ¾ inch bolted heads, for 150 lb. pressure.
1 5x15-ft. Abbe tube mill.
1 5x14-ft. tube mill, silex lining.
47 steel cars, 38x66, 28-in. gauge.
1 belted elevator.
2 125-H. P. Heine water tube boilers.
1 150-H. P. Heine water tube boilers.
3 300-H. P. Rust water tube boilers.
1 15x36 Hamilton Corliss engine.
1 12x36 Allis Corliss Engine.
1 14x36 Allis Corliss Engine.
1 16x42 Allis Corliss engine.

Wainwright heater, feed pump and piping. All used less than six months. Will sell any part at a bargain. Immediate shipment.

The
Morse Bros. Machinery & Supply Co.
Denver, Colorado 1-2-4

FOR SALE—On hand for immediate shipment rack cars, cast iron double deck cars, end dump cars, turntables. Offered at exceptionally low prices to move quickly to make room for government work. Address: 6-D, care of "Brick and Clay Record." 6-2

POWER PLANT MACHINERY

For Immediate Delivery.

BOILERS

5—229 H. P. and 2—605 H. P. B. & W., 160 lbs. pressure.
7—250 H. P. and 2—500 H. P. Sterling, 150 lbs. pressure.
1—305 H. P. B. & W., 200 lbs. pressure.
3—150 H. P. Return Tubular, high pressure.

D. C. UNITS

2—800 K. W. 250 Volt Units, Compound Engines.
3—300 K. W. and 4—150 K. W. 3 wire. 125—250 Volt Units, Compound Engines.
Innumerable Others, all sizes.
Complete Power Plants Designed and Erected.

POWER EQUIPMENT CO., Engrs.
1218 Chestnut St., Philadelphia

FOR SALE

We offer subject to prior sale the following machinery:

1	steam shovel, ¾ yard dipper, 30-ft. steel boom, 12-ft. gauge; built in own shops; capacity 40 tons per hour into cars; in good working order	$1,500
2	36-in. gauge locomotives, Vulcan and American; 10x14; in good order	2,000
16	V-shape steel dump cars, 3 yard capacity, 36-in. gauge, good condition. Manufactured by Lakewood and Atlas car companies. Reasonable price.	

WABASH PORTLAND CEMENT CO.
Ford Bldg., Detroit, Mich.

For Sale or Rent
Thew Shovels

2 Type O—⅝-Yd. Traction
1 Type O—⅝-Yd. Standard Gauge
1 Type A-1—⅞-Yd. Traction
1 No. 3—1¼ Yd. Standard Gauge
1 9″x9″ Air Compressor
1 7″x10″ Lidgerwood D.C., D.D., Hoist

The Cleveland & Erie Machinery Co.
4209 Euclid Ave. Cleveland, O.

FOR SALE—2,500 rolled edge galvanized metal pallets 10x33 inches; good condition; bargain. Address: 6-M, care of "Brick and Clay Record." 6-TF

THEW STEAM SHOVEL

Same as new, used one season only. ¾-yd. No. O on traction wheels. Immediate shipment. Low price. Location: Northern Indiana. Moore Bros., 39 So. La Salle Street, Chicago, Ill.

Rails

100	tons, 12-lb.	New.
200	tons, 16-lb.	New.
300	tons, 20-lb.	New.

Locomotives

2 9-ton, 24-in. gage Davenport S. T. Steam 250-lb. **First-Class.**
1 7½-ton 36-in. gage Davenport S. T. Steam 160-lb. **Good as new.**
14 14-ton 36-in. gage Saddle Tanks, Steam 140-lb. **Overhauled.**

Dryer Cars

200 25-in. gage, single deck. **Practically new.**

Dump Cars

6 1½-yd. 36-in. gage Western 2-way side dump. **Good.**
30 1½-yd. 24-in. gage. **Will be rebuilt.**
10 1½ yd. 36 in. gage Atlas steel V-shape two-way. **First-Class.**

Pipe—(1-1½ and 2 in.)

Standard black, threaded and with couplings, full lengths and first-class.

Also short lengths suitable for grates.

ZELNICKER IN ST. LOUIS

Get Bulletin 237—70 bargain pages.

FOR SALE—New Ross Keller four-mold triple pressure brick press. Excelsior Tool & Machine Co., Manufacturers of Brick Presses and Pulverizers. East St. Louis, Ill. 11-TF

RAILS

50 tons of 12 lb. rail, new.
100 tons of 16 lb. rail, new.
250 tons of 30s-40s and 50s.
M. K. FRANK, FRICK BLDG.,
PITTSBURGH, PA. 52

The Plymouth Gasoline Locomotive

Is At the Burke Plant and This Is What They Think of It.

ALEXANDER BURKE'S SONS

Manufacturers of Brick

P. O. Address
Hawthorne Station
Chicago, Illinois

Office and Yards
48th Ave. & 39th St.
Cicero, Illinois

Chicago, November 14th, 1917

J. D. Fate Co.,
Plymouth, Ohio.

Gentlemen—

Kindly ship us by express to 1864 S. Crawford Ave., the two drive chains for the three-ton gasoline locomotive. We wish you would kindly rush these.

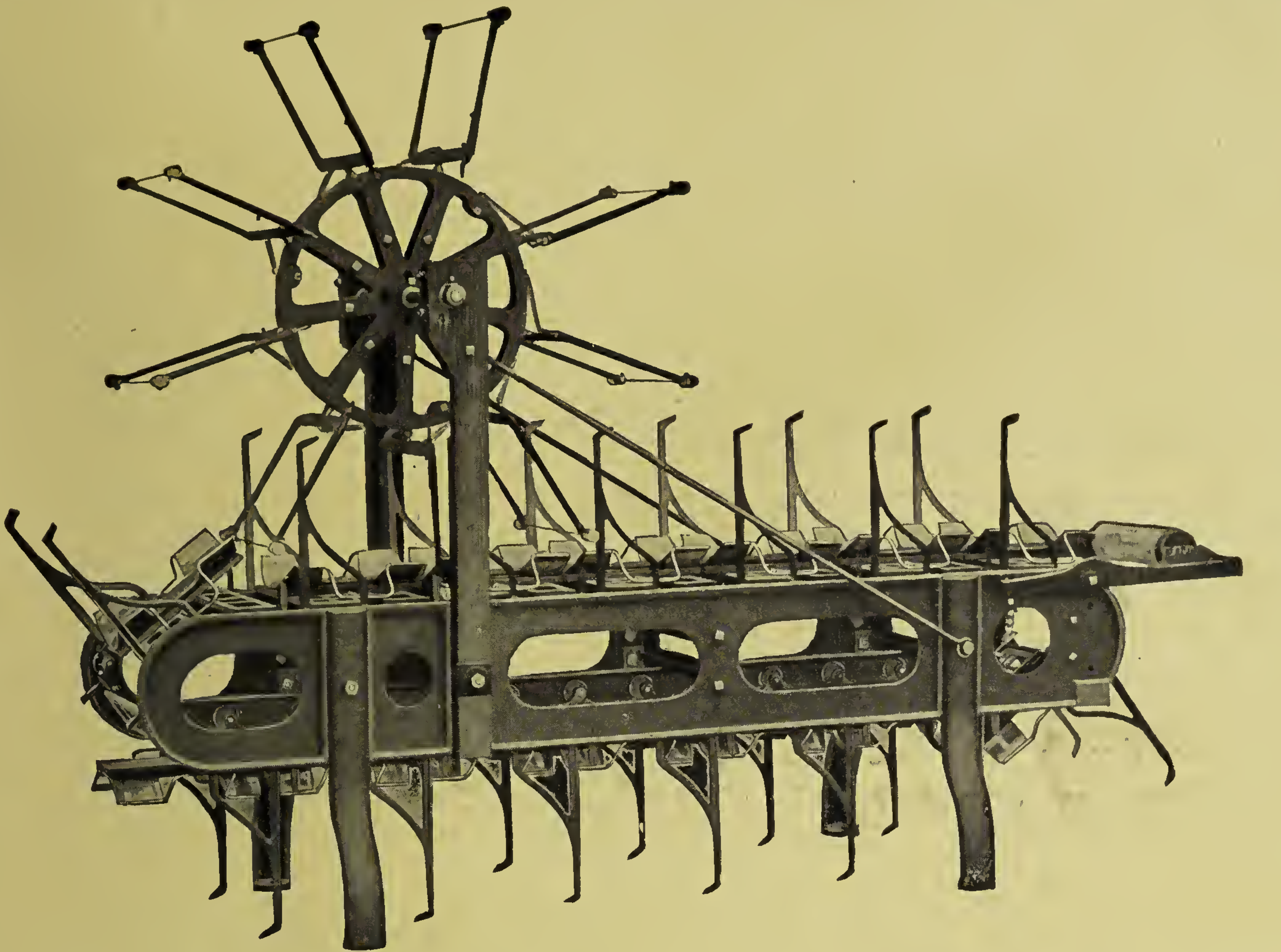
We wish to thank you for the trouble experienced in shipping us the parts recently ordered for the locomotive. We were informed by the express messenger at the depot in Chicago of your automobile trip in order to make connections with his train.

We are contemplating purchasing another locomotive in the near future—probably a heavier type—and when in the market will remember the courtesy of the J. D. Fate Co. We feel we are "boosters" for your machine and well we might be as it does the work of eight men and eight horses and is the cheapest machine to operate, considering the work accomplished, that we have on our plant.

Yours very truly,
ALEXANDER BURKE'S SONS
Per John J. Burke

JJB-GB

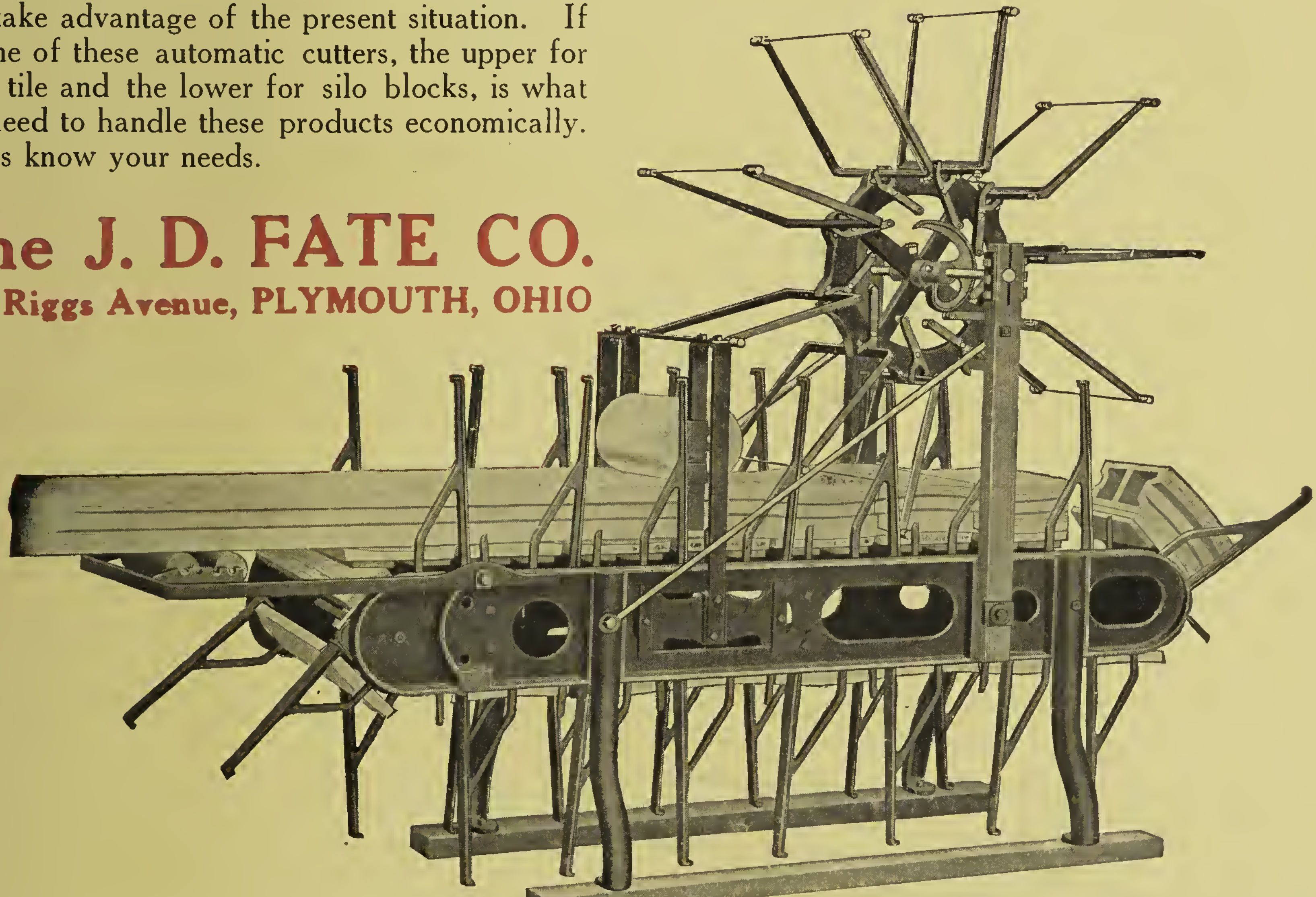
The Plymouth, best for Clay Plants—made by FATE



Perhaps you are planning on changing your present product to drain tile or silo blocks, and thus take advantage of the present situation. If so, one of these automatic cutters, the upper for drain tile and the lower for silo blocks, is what you need to handle these products economically. Let us know your needs.

The J. D. FATE CO.

241 Riggs Avenue, PLYMOUTH, OHIO



National War Savings Day June 28th

That's the day we sign up.

That's the day we tell Uncle Sam just how hard we want to win this war. That's the day our government has officially set for us to purchase War Savings Stamps.

On June 28th every man, woman and child in the United States will be called upon to pledge his or her full quota of War Savings Stamp purchases for 1918.

You will be expected to pledge the **full** amount that you can afford—no more—but by the same token, no less.

In every state, county, city, town and village the War Savings Committees are preparing for this big patriotic rally of June 28th. Unless you have already bought War Savings Stamps to the $1,000 limit, get busy with paper and pencil and figure out the **utmost** you can do.

Remember this. You take no chances when you go the limit on War Savings Stamps. They are the best and safest investment in the world. They pay you 4% interest compounded quarterly. They **can't** go below par. You can get back every dollar you put into War Savings Stamps **any time you need it.** You can turn them in at the Post Office **any time** for their full value plus interest.

Uncle Sam is asking hundreds of thousands of men to **give** their lives to their country. He is asking you only to **lend** your money.

What are **you** lending?

National War Savings Committee, Washington.

W.S.S.
WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT

Contributed through Division of Advertising — *United States Gov't. Comm. on Public Information*

This space contributed for the Winning of the War by
BRICK AND CLAY RECORD

15 [illegible] air per # coal % cone

1st air [illegible] 07, 21.5 Co

temp [illegible] [illegible] 1/2 to 2/3 of temp (800°)

[illegible] [illegible] [illegible] [illegible] [illegible] hour.

25 per cent [illegible] of Velocity of flue gas

[illegible]

Big [illegible] [illegible] flue gas

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